SITE SAFETY AND HEALTH PLAN
CES Environmental Services, Inc.
Houston, TX

Emergency and Rapid Response Services Contracts
Contract No. EP-S6-0702-001, Task Order No. 62

Submitted to:

U.S. Environmental Protection Agency
Region 6

Prepared by:

CB&I Federal Services LLC

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Safety and Health Plan Disclaimer

This Site Safety and Health Plan (SSHP) has been designed for the methods presently contemplated by CB&I Federal Services LLC (CB&I), for execution of proposed work. Therefore, the SSHP may not be appropriate if the work is not performed by or using the methods presently contemplated by CB&I. In addition, as the work is performed, conditions different from those anticipated may be encountered and the SSHP may have to be modified. Therefore, CB&I only makes representations of warranties as to the adequacy of the SSHP for currently anticipated activities and conditions.

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Acronyms and Abbreviations

°F	degrees Fahrenheit
ACGIH	American Conference of Governmental Industrial Hygienists
AHA	Activity Hazard Analysis
AIDS	acquired immunodeficiency syndrome
APP	Accident Prevention Plan
CB&I	CB&I Federal Services, LLC
CFR	Code of Federal Regulation
CMS	CB&I Management System
CNS	central nervous system
CPR	cardiopulmonary resuscitation
CRZ	Contamination Reduction Zone
DEET	N,N-Diethyl-m-toluamide
DOT	Department of Transportation
EHS	Environmental, Health, & Safety
EMS	Emergency Medical Service
GI	gastro intestinal
HBV	hepatitis B virus
HIV	human immunodeficiency virus
HSE	Health, Safety, and Environmental
IDLH	immediately dangerous to life and health
JSA	Job Safety Analysis
mg/m^3	milligram(s) per cubic meter
MSDS	Material Safety Data Sheet
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
OSC	On-Scene Coordinator
OSHA	Occupational Safety and Health Administration
PCB	polychlorinated biphenyl
PEL	permissible exposure limit
PPE	personal protective equipment
ppm	part(s) per million
RM	Response Manager
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
START	Superfund Technical Assessment and Response Team
STEL	short-term exposure limit
TCEQ	Texas Commission on Environmental Quality
TLV	threshold limit value
TWA	time-weighted average
USEPA	U.S. Environmental Protection Agency

1.0 Introduction

This Site Safety and Health Plan (SSHP) describes the safety and health guidelines developed to protect on-site personnel, visitors, and the public from physical harm and exposure to hazardous materials during the project activities at the CES Environmental Services, Inc., Houston Texas (the site). This SSHP is prepared in accordance with the standards established by the Occupational Safety and Health Administration (OSHA) for regulated sites. Specifically, this HASP complies with the appropriate standards contained in 29 Code of Federal Regulations (CFR) 1910.120 and 29 CFR 1926.65. Additionally, this SSHP follows the guidelines established in the Office of Solid Waste and Emergency Response Integrated Health and Safety Program Standard Operating Practices for Office of Solid Waste and Emergency Response Field Activities, U.S. Environmental Protection Agency (USEPA) (Publication 9285.0-01 C, June 2002).

The safety and health measures presented are in effect for the duration of the project. This document is intended for field use by CB&I Federal Services, LLC (CB&I) personnel and subcontractors. SWS Environmental Services (SWSES) is currently planned to be our subcontractor for this project. All project personnel are required to abide by these measures. Each person working on these projects must sign the SSHP Acknowledgment Form (Appendix A, "Site Safety and Health Plan Acknowledgment"). Where not specifically mentioned, all project personnel are required to comply with the applicable regulations contained in 29 CFR 1910 and 29 CFR 1926 while conducting this work. The procedures and guidelines contained herein are based upon the best available information at the time of the plan's preparation. Specific requirements may be revised if new information is received or site conditions change. Any revisions to this plan will be made with the knowledge and concurrence of CB&I and the USEPA. Revisions to this SSHP will be included as a SSHP Amendment (Appendix B, "Site Safety and Health Plan Amendments"). Any amendment to the SSHP must have written approval from the CB&I and the USEPA.

This SSHP, used in conjunction with the Activity Hazard Analyses (AHA) (Appendix C, "Activity Hazard Analyses") will also serve as the projects:

- Site-Specific Safety and Health Plan
- Accident Prevention Plan
- Emergency Response Plan
- Emergency Action Plan
- Fire Prevention Plan

1.1 Site Background

The CES Environmental Services Site ("Site") is a former chemical recycling facility that is located at 4904 Griggs Road, Houston, Harris County, Texas. Other contiguous properties associated with the Site are 4900 Griggs Road and 5910 Wayland Street. The Site is surrounded by residential, educational, and commercial properties.

CES Environmental Services filed for bankruptcy in 2010. The property is part of the CES Bankruptcy Estate, which is being managed by a Trustee appointed by the Bankruptcy Court. The Trustee's job is to liquidate assets of the Estate for the benefit of the creditors.

There are numerous chemical containers located on-site that have not been actively managed or secured to prevent releases to the environment since August 2010. The Site has recently experienced two incidents of vandalism, which occurred in March and July 2014. These incidents resulted in the spillage of chemicals and waste to the facility property and the adjacent residential neighborhood. These spill responses were addressed by the Estate, the City of Houston, the Texas Commission on Environmental Quality ("TCEQ") and the EPA.

Although lacking adequate funding, the Trustee has been and continues to address waste issues at the Site. The EPA and TCEQ will begin the process of addressing the waste issues on the property. At the same time, the Estate will complete its ongoing cleanup actions at the Site, which include the disposal of 1 vacuum box, 1 roll-off box, and waste piles. The Estate's actions for these items are being coordinated with both EPA and TCEQ. In April 2012 the USEPA conducts sampling of 30 of the 40 targeted residential properties in and around 1705 and 1714 Davis Street. The parameters of the contamination are unknown and the large numbers of samples is necessary to evaluate extent of contamination. It is likely that lead will be an ongoing issue, related to the demolition of historic homes that consequently spread lead-based paint in the lots being sampled.

The Site was referred to USEPA by Texas Commission on Environmental Quality (TCEQ) on 07 February 2012. Access was granted to the north two parcels by the owner on 01 March 2012. Access was gained to the south two parcels by the owners on 08 August 2012. This sampling event served as a preliminary assessment of hazardous wastes and materials in potential source areas and drainage pathways. This Trip Report provides results from a preliminary sampling event conducted to assess potential source material and drainage pathways.

The Site consists of approximately 11 vacuum boxes, 2 roll-off boxes, 12 frac tanks, 2 Tanker Trailers, 20 above ground storage tanks (ASTs), 15 waste water treatment tanks, waste piles, and numerous totes, vats, drums, and smaller containers.

1.2 Site Location

The CES Environmental Services, Inc., facility located at 4904 Griggs Road, Houston, TX 77021.

1.3 Safety and Health Policy Statement

CORPORATE SAFETY POLICY

CB&I is firmly committed to operating all of our facilities and projects in a safe, efficient manner and in compliance with all applicable safety, health and environmental laws, rules and regulations. Through the adoption of these sustainable practices, we are committed to securing a high quality of life for current and future generations, restoring and sustaining a healthy environment and increasing value for our customers, shareholders and business partners.

We expect all of our employees, clients and partners to uphold the highest HSE standards, to promote a positive and proactive safety attitude and to exhibit a heightened awareness of their surroundings both on and off the job. We must identify risks and hazards in order to provide an injury-free work environment where people, equipment and the environment are not placed at unreasonable threat of injury or damage. We will continually strive to be good citizens in our own community, as well as in every community in which we operate.

Through compliance with this policy, we will all actively participate in this process and advocate this philosophy. Together we can accomplish our goals and exceed the minimum requirements provided by applicable laws and regulations. Together we can be proud to be a part of a team that truly values the importance of health, safety and respect for the environment. Together we can become a recognized leader in all of our businesses as a steward for our fellow employees, the environment and the communities in which we live and work.

We are committed to the spirit and intent of this policy and the laws, rules and regulations at its foundation. This SSHP prescribes the minimum procedures that must be followed during field activities. Operational changes that could affect the health and safety (HSE) of personnel, the community, or the environment will not be made without the prior approval of the CB&I project manager (PM), and the CB&I HSE manager.The provisions of this plan are mandatory for all CB&I personnel and subcontractors assigned to the project. CB&I requires that all visitors to the work site to abide by the requirements of this plan.

Health, Safety, and Environmental Policy

It is the Policy of CB&I and a key component of our culture, to execute all our activities in such a manner that will ensure the Health, Safety, and Environmental protection of all our employees, clients, subcontractors, suppliers and the communities in which we live and work.

CB&I will manage and apply our HSE Management System in such a manner that every employee shall be involved and ensure the effective implementation of our HSE Principles to assist the Company in achieving our established Goal of Zero Incidents.

All Managers and Supervisors of CB&I have the responsibility to continuously improve Health, Safety, and Environmental awareness among all employees, to manage proper usage of the environment, tools and equipment, and to create a culture in which everyone shares responsibility for the Well Being of their fellow workers and the community.

All Employees of CB&I have the responsibility to execute their personal and work activities in such a manner as to prevent all circumstances which could lead to incidents that may cause personal injury or illnesses, security incidents or environmental damage.

CB&I will measure HSE performance and, by setting challenging objectives and targets, strive for continuous improvement.

CB&I will implement this Policy in combination with the Health, Safety, and Environmental laws, regulations, standards, and codes of practice of our clients and all applicable governmental agencies.

Philip Asherman
President and CEO

February 13, 2013

SAFETY PROGRAM GOALS, OBJECTIVES, AND ACCIDENT EXPERIENCE GOALS

CB&I consider safety the highest priority during work at a site containing potentially hazardous materials and has established a goal of **zero incidents** for all projects. All projects will be conducted in a manner that minimizes the probability of near misses, equipment/property damage, or injury. CB&I will establish programs to recognize people and projects that demonstrate excellence in safety performance. CB&I will use safety inspection and observation programs to identify and correct unsafe acts and conditions. Safety awareness programs will be used to provide continuous training and development of good safety practices. CB&I site supervision will investigate all incidents to determine root causes and institute corrective actions to prevent recurrence. CB&I will provide and enforce safety rules to protect employees, subcontractors, clients, and the public.

CB&I is ultimately responsible for the implementation of the health and safety program.

EMPLOYER ULTIMATE RESPONSIBILITIES

Managers must conduct their businesses in compliance with governmental safety regulations and company procedures. All applicable CB&I HSE procedures are presented in the CB&I Management System 710 series, and will be implemented for conducting this project. CB&I procedures will be applied to all CB&I subcontractor organization's personnel as well.

2.0 Organization, Qualifications, and Responsibilities

There will be numerous personnel required to complete this project. The necessary personnel will be off-site program team members, on-site CB&I project personnel, and various subcontractors, as necessary. All project personnel share the responsibility for safely completing project activities. Project organization personnel are provided in Table 1, "Project Organization Personnel."

2.1 On-Site Personnel

All on-site personnel are responsible for continuous adherence to safety and health procedures during the performance of assigned work. In no case may work be performed in a manner that conflicts with the inherent safety and environmental precautions outlined in this plan, after due warning, personnel violating safety procedures will be dismissed from the site and possibly terminated from further work.

Any person who observes unsafe acts or conditions or other safety problems should immediately report them to supervisory personnel. If there is any dispute with regard to safety and health, on-site staff will attempt to resolve the issue and if the issue cannot be resolved, they will consult off-site technical staff and supervisors for assistance. The specific task or operation in question shall be discontinued until the issue is resolved.

2.2 Response Manager

The Response Manager (RM) is be the "primary" contractor contact with the USEPA On-Scene Coordinator (OSC) and shall be responsible for the management and execution of all response actions. The RM will be responsible for the implementation of the statement of work for the task order and will execute services under the technical direction of the OSC. The RM shall be on the scene on a daily basis unless instructed otherwise by the OSC. In these instances, the contractor shall maintain someone on site at all times with authority to act for the contractor and coordinate subcontract activities. The RM shall implement this SSHP to protect all response personnel and insure that the elements of the SSHP are being properly carried out. The RM is the primary safety official and emergency response coordinator at the project. The RM is responsible for maintaining contact with the HSE Program Manager. The RMs alternate Site Safety and Health Officer (SSHO) will be the Foreman(is this correct, I thought it was SWS Safety Officer?), when he/she will not be available on site.

2.3 HSE Program Manager

The HSE Program Manager is responsible for the following actions:

- Developing the SSHP
- Maintain and oversee implementation of this SSHP
- Visit the project as needed to audit the effectiveness of this SSHP
- Conduct health and safety audits of site activities when requested by the OSC.
- Remain available for project emergencies
- Develop modifications to this SSHP as needed
- Evaluate occupational exposure monitoring/air sampling data and adjust SSHP requirements as necessary
- Approve this SSHP by signature

2.4 Site Safety and Health Officer

The overall SSHO for this project is the HSE Program Manager; however, CB&I is assigning the RM as the "contractor" SSHO. The SSHO shall have the authority and is responsible for the following actions:

- Be present during site operations to implement this SSHP
- Inspect site activities to determine if operations are being conducted in accordance with this SSHP and OSHA regulations; and to identify safety and occupational health deficiencies, recommend corrective measures for those identified deficiencies, and then verify the corrective measures have been implemented
- Coordinate changes/modifications to this SSHP with the HSE Program Manager and the OSC
- Facilitate project-specific training

The SSHO has the authority to suspend operations at the site due to the ineffectiveness of or nonconformance to this SSHP.

Other SSHO responsibilities include:

- General safety and health program administration
- On-site contact for regulatory agencies on matters of contractor safety and health
- Establish employee exposure monitoring notification programs

- Investigate significant accidents and illnesses and implement corrective action plans
- Observe work party members for symptoms of on-site exposure or stress
- Conduct heat and cold stress monitoring of site personnel. In consultation with the OSC, adjust duration of exclusion zone work according to worker stress monitoring results.
- Arrange for the availability of on-site emergency medical care and first aid, as necessary
- Determine evacuation routes, establish and post local emergency telephone numbers, and arrange emergency transportation
- Verify that all site personnel and visitors have received the proper training and medical clearance prior to entering the site
- Establish work zones (exclusion, contamination reduction, support) on site, in accordance with this SSHP. Ensure that work zones are physically delineated and maintained throughout the response action. Ensure that personnel and equipment decontamination stations are constructed and maintained in accordance with this SSHP
- Facilitating tailgate safety meetings
- Prepare and conduct health and safety training classes.
- Maintain training and safety meeting attendance logs and records
- Assist in selecting personal protective equipment (PPE) use
- Verify that the respiratory protection program is implemented
- Verify that decontamination procedures meet established criteria
- The CB&I SSHO (RM or designee) will conduct survey and exposure monitoring/air sampling, interpret the data, and evaluate hazards from results.

The SSHO shall be on-duty at all times when work is being performed, unless the Alternate SSHO has assumed the duties and responsibilities.

2.5 Subcontractors and Visitors

Both CB&I and subcontractors share the responsibility for the safety and health of their employees. Subcontractors are also responsible for complying with the standards established in this SSHP, and all other project safety requirements. Subcontractors shall be prequalified according to the requirements of CMS-710-02-PR-04400, Subcontractor Selection Evaluation and Monitoring. The following are some of the requirements that apply to subcontractors:

- All subcontractors under the direction of CB&I will report to the RM.
- An assigned safety representative for each subcontractor shall be present on any day that work is being performed. The name of the assigned safety representative shall be conveyed to the RM (or designee).
- Subcontractors shall submit all training and medical surveillance documents to CB&I prior to mobilization.
- Planned operations for the day shall be verbally conveyed to the RM (or designee) at the beginning of each day.
- All subcontractor employees working on site shall sign the Site Entry Log (Appendix D, "Forms") at the beginning and end of each workday.
- All subcontractor personnel shall attend a project safety orientation prior to beginning work on site.
- All subcontractor personnel shall attend the morning tailgate safety meeting. If scheduling precludes attendance, then subcontractors shall hold and document their own safety meeting. Safety meeting documentation, using the Safety Meeting Log form (Appendix D) is to be submitted to the RM (or designee).
- All accidents, fires, injuries, illnesses, and spills shall be immediately reported to the RM (or designee).
- Heavy equipment shall be inspected daily by the equipment operator using the Daily Equipment Inspection checklist (Appendix D). Inspection documentation is to be submitted to the RM (or designee).
- Vehicles, such as trucks, vans, and automobiles are to be inspected once per week by the individual driving using the Vehicle Inspection form (Appendix D). Inspection documentation is to be turned into the RM (or designee).
- Subcontractors are required to frequently inspect work sites for safety deficiencies and correct all deficiencies. Documentation of these inspections, as well as the corrective actions implemented, is to be submitted to the RM (or designee). The Project Safety Inspection Report (Appendix D), Daily Safety Inspection Report (Appendix D), or equivalent shall be used.

All visitors are subject to the established project site entry requirements. All visitors will be briefed by the RM on the hazards to be expected on the site and the safety and health controls required. The RM will verify that all visitors entering the site are properly protected and are wearing or provided with the appropriate personal protective equipment (PPE). CB&I Federal Services, LLC does not provide visitors with respiratory protection. The RM will provide an escort for all visitors while on site. Each visitor must enter his or her name, arrival time at the site, and departure time from the site on the Site Entry Log (Appendix D).

3.0 Accident Prevention Plan

This section addresses the components of the Accident Prevention Plan (APP).

3.1 Project Safety Goal

Safety is CB&I's highest priority. CB&I Federal Services, LLC and project personnel have targeted a goal of **zero incidents**, injuries, illnesses, and environmental incidents for the duration of this project. All activities shall be conducted in a manner that supports this goal.

3.2 Indoctrination of New Employees

Both CB&I and subcontractor personnel are required to attend a safety-orientation meeting prior to working on site. These orientation meetings are documented and kept on file. Refer to Section 9.4 for an outline of the information that is conveyed to all personnel.

3.3 Fire Prevention and Protection

This section details fire prevention and protection procedures/resources at the site.

3.3.1 Workplace Fire Hazards

The primary fire hazards at the project consist of fueling operations, storage of fuels, and other flammable liquids at the project site and dry grasses at outdoor locations.

3.3.2 Potential Ignition Sources

The significant ignition sources at the project include smoking materials and vehicle/equipment exhaust. Personnel shall also be alert for other ignition sources such as, static electricity, lightning, and electrical equipment. Additionally, incompatible chemicals shall be kept segregated to prevent ignition by chemical reaction.

3.3.3 Fire Control Systems, Equipment, and Procedures

Depending on the nature and extent of any fire, the following fire control systems and equipment are available:

- The Houston Fire Department is the available fire fighting service for the site. The Fire Department should be contacted for all fires that occur. The Houston Fire Department can be contacted by dialing 911or 832-394-6700 for routine inquiries. Liaison with the Fire Department should be made upon mobilization to the site.
- The Fire Department shall be contacted prior to beginning new operations at the site and they shall also be contacted at the conclusion of operations. The fire department will be encouraged to participate in a site tour to receive an explanation of the planned work and the materials involved. ??????????????????????????????????

- There are fire extinguishers mounted at selected locations in CB&I-controlled facilities. Project vehicles and construction equipment shall also be equipped with fire extinguishers.
- A CB&I Hot Work Permit is required before a flame or spark-producing activity is to commence (Section 4.2.3).
- The AHA for fueling operations shall be followed by project personnel.
- Flammable and oxidizing materials shall be stored in marked (No Smoking, Matches, or Open Flame) areas with fire extinguishers available.
- Smoking shall only be permitted in designated areas. Personnel shall never discard cigarette butts into the environment while working at the site.
- Project personnel are only permitted to extinguish small fires in their incipient stages.
- Fighting fires is prohibited by project personnel and shall only be performed by the local fire department (Section 11.5).

3.3.4 Fire Control Equipment Maintenance Responsibilities

The RM, or designee, is responsible for the monthly inspections and annual service of all fire extinguishers provided at the site. Vehicle and construction equipment operators are responsible for the inspection and service of vehicle/equipment-equipped fire extinguishers.

3.4 Housekeeping

Housekeeping shall be a priority at the project site. The following provisions are specified to maintain a high standard of housekeeping:

- The importance of housekeeping and the expectations that good housekeeping shall be maintained will be regular topics of the morning safety meetings.
- Work areas shall be "cleaned up" on a daily basis.
- Subcontractors are required to maintain good housekeeping practices.
- Dumpsters and adequate trash receptacles shall be provided in sufficient quantities in active work areas and are to be emptied regularly. Potentially contaminated waste shall be segregated from sanitary waste and refuse for proper characterization and/or disposal. Hazardous waste containers shall be labeled according to applicable regulations.
- Housekeeping is an operational/safety item, which is regularly considered during routine inspections.
- Nails shall be bent-over or removed from scrap lumber immediately.

3.5 Mechanical Equipment Inspections

Before any machinery or mechanized equipment is placed in use, it shall be inspected and tested in accordance with the manufacturer's recommendations. All safety deficiencies noted during the inspection shall be corrected prior to the equipment being placed in service at the project. If at anytime the machinery or mechanized equipment is removed and subsequently returned to the project (other than equipment removed for routine off-site operations as part of the project), it shall be re-inspected prior to use. All construction equipment shall be inspected by each operator prior to use on the project and shall then be inspected on a daily basis. Daily inspections shall be documented on the Daily Equipment Inspection checklist (Appendix D). Deficiencies in the equipment shall be noted on the form. All inspection documentation shall be submitted to the RM, or designee, prior to using the equipment if safety deficiencies are observed and at the end of the day if no safety deficiencies are observed.

The RM, or designee, shall immediately evaluate the inspection forms and determine if the equipment is in need of immediate repairs and if it should be "red tagged" and taken out of service. If the equipment is taken out of service, then the equipment shall not be used until the RM, or designee, is satisfied that the necessary repairs have been made. For minor deficiencies that do not compromise the safe operation of the equipment, repairs shall be made at the discretion of the equipment owner. All inspection records are to be kept on file in the CB&I field office.

3.6 First Aid and Medical Facilities

The following addresses first aid and medical facilities:

- A first aid kit is provided and maintained in the office. The first aid kit shall be inspected weekly by the RM, or designee. There shall be a first aid kit available in all project vehicles.
- Emergency telephone numbers are posted at selected CB&I-controlled telephones (Section 11.0).

The designated hospital for this project is:

Memorial Hermann Hospital – Texas Medical Center - ER
6411 Fannin Street
Houston, TX 77030
Phone: 713-704-4000

The CORE Health Networks clinic for the project is:

Concentra Medical Center
8799 N Loop Frwy E
Houston, TX 77029
Phone: 713-674-1114
Fax: 713-674-5169
Hours of operation: Mon - Fri, 8:00 am - 5:00 pm

CB&I employees shall utilize this clinic for injuries that do not require assistance or transport by Emergency Medical Services (EMS).

The route to Work Care North is posted in the field office (Section 11.3); however, the facility to care for serious medical emergencies shall be determined by the Emergency Medical Technician responding to the incident. At a minimum, two on-site employees shall be certified in first aid and cardiopulmonary resuscitation (CPR). First aid and CPR training/certification must be made by a reputable provider, such as, the American Red Cross or American Heart Association.

3.7 Sanitation

The following provisions will be made to address sanitation:

- Portable toilets will be provided, as necessary. Arrangements will be made for the routine servicing and cleaning of these units.
- Safe drinking water shall be provided to all site personnel. One-serving size individual bottle of water or disposable sanitary cups shall be provided along with receptacles for their disposal. All outlets dispensing nonpotable water (under CB&I control) shall be posted with appropriate warning signs. Systems furnishing nonpotable water and systems furnishing potable water shall be constructed to remain completely independent of each other.
- Portable washing facilities are provided as necessary in Contamination Reduction Zones (CRZ). Portable washing facilities shall consist of, at a minimum, soap, water, and paper towels.

3.8 Illumination

Adequate lighting shall be provided to perform all activities in a safe manner. Work shall be scheduled, when possible, during daylight hours. When work is performed before sunrise, after sunset, inside buildings, or within other structures, the minimum lighting requirements specified in Table D-3 of the 29 CFR 1926.56 shall be provided.

3.9 Engineering and Administrative Controls

The use of engineering and administrative controls shall be the preferred method of reducing or eliminating hazards. Only in cases where the use or application of engineering and administrative controls is deemed as not feasible, then PPE may be used.

3.10 Signs, Labels, and Tags

Hazard warning signs shall be used to define specific hazards of a nature such that failure to designate them may lead to accidental injury to workers or the public, or both, or to property damage. All new and replacement signs shall be in accordance with the requirements contained in 29 CFR 1910.145.

All containers of hazardous materials shall be labeled as to contents and associated hazards. Hazard warning labels, whether on containers or equipment, shall not be removed by employees without the permission of the RM.

Tags shall be used as a means to prevent accidental injury or illness to employees who are exposed to hazardous or potentially hazardous conditions, equipment, or operations, which are out of the ordinary, unexpected, or not readily apparent. Tags shall be used until the identified hazard is eliminated or the hazardous operation is completed. Tags need not be used where signs, guarding, or other positive means of protection are being used. All equipment that is in need of repair for safety related reasons shall be tagged as "Out of Service" until the equipment has been satisfactorily repaired.

3.11 Safety Promotions

The following methods for promoting accident prevention will be enacted:

- Accident prevention will be a regular topic discussed at safety meetings.
- All personnel will be encouraged to sign a Zero Incident Pledge poster that is to be posted in the office.
- The project will participate in the established Safety Council as required by CMS-710-05-PR-02000 Project HSE Committee (Current Revision).
- A Safety Incentive Award Program is in place to reward safe employee behavior.

3.12 Accident Reporting

All accidents, regardless of their severity, shall be reported to the OSC, RM (or designee), and HSE PROGRAM MANAGER. Other provisions for accident reporting and investigation are addressed later in this SSHP (Section 13.3).

3.13 Scope of Work (Should be modified based upon workplan)

The purpose and scope of CB&I Federal Services (CB&I) and it team subcontractor SWS Environmental Services (SWSES) Work Plan is to develop and implement a site specific operational plan to complete the objectives listed in Task Order 62. The task order operational objectives are:

- Collect, treat, or dispose the storm water collected at the site.
- Prepare for disposal of the waste materials in vacuum boxes, roll off boxes, frac tanks, tanker trailers, Above Ground Storage Tanks (ASTs), vats, totes, drums and smaller containers.
- Dispose of waste material in vacuum boxes, roll off boxes, frac tanks, tanker trailers, ASTs, vats, totes, drums and smaller containers.
- Decontaminate and prepare for disposal or scraping all on site waste containers.
- Remove, collect, and prepare for disposal contaminated concrete, asphalt, soils and debris.
- Provide sampling assistance of site waste and contaminated materials.
- Restore the site and damaged environment.
- (Note: May be adjusted as site conditions warrant or per USEPA direction)

CB&I will outline an approach to execute the project in a safe and efficient manner. A site specific Health and Safety Plan (HASP) will accompany this document. The Work Plan includes a description of the operational objectives, planning, personnel, equipment, supplies and materials for CB&I, its team subcontractor SWS Environmental Services (SWSES), subcontractors, suppliers, and vendors. CB&I/SWSES's approach are divided into the preplanning tasks and site activities.

3.14 Activity Hazard Analysis

Activity Hazard Analyses identify potential safety, health, and environmental hazards associated with specific tasks and provide protective measures for personnel, the community, and the environment.

Activity Hazard Analyses are developed for all major tasks performed during this project and included as Appendix C. The AHAs shall be reviewed and modified by the RM (with input from the OSC, field employees, and subcontractors). An AHA shall also be prepared when new tasks

are added, the job situation changes, or when it becomes necessary to alter safety requirements. Work will not proceed on a particular task/phase until the AHA has been reviewed with the work crews.

The names of the competent/qualified person(s) required for a particular activity (i.e., excavations, scaffolding, fall protection, and other activities) as specified by OSHA will be identified and included in the AHA.

Activity Hazard Analyses will be reviewed and modified as necessary to address changing site conditions and operations.

3.15 Job Safety Analyses

JSAs are an effective management technique for identifying hazardous conditions and unsafe acts in the workplace. A JSA is intended to analyze the individual steps or activities, which together create a job or specific work duty, and to detect any actual or potential hazards that may be present. Each crew must complete a JSA for each task that will be accomplished for that day, as required by CMS-710-05-PR-01700 "Work Area Hazard Assessment Process". The JSA shall be revised, as necessary, when unforeseen circumstances arise or work site conditions change. Any revisions shall be immediately communicated with the affected site workers. If the need to complete an unplanned task becomes necessary at any point throughout the day, a new JSA shall be prepared to cover that task. The JSA's shall be completed using the JSA Checklist Form and JSA Worksheet Form, both of which can be found in Appendix D of the SSHP.

3.16 Behavior-Based Safety (I CARE)

In our industry, between 80 and 95 percent of incidents are caused by at-risk behavior. The frequency of injuries can be reduced if the entire workforce participates in the process. Behavior-based safety requires progressive and proactive thinking.

The I CARE process is based on human behavioral psychology that uses a "worker to worker" anonymous observation / feedback process to positively reinforce safe behaviors that prevent injuries and to coach / discuss at-risk behaviors that are contributing causes to injuries. The observation / feedback process is to occur at the work front and is "worker to worker" based.

The I CARE process is derived from a behavioral-based modification process designed to cause cultural change within the organization to enhance overall performance.

The key elements if the I CARE processes are:

- Employee / management involvement
- Identification of safe and at-risk behavior
- Observation

- Feedback
- Intervention (instructional, motivational, or supportive)

The employees on the I CARE team have ownership of these processes after they receive training in the behavioral modification principles, theory, and safe work observation process, CMS-710-05-PR-02600.

3.17 Step-Back for Safety

Safety isn't just a concept at CB&I – it's a core value. It's imperative that each of us "Step Back" before engaging in any task to analyze precursors to potential errors and assess all potential hazards, even for simple tasks that we have performed before. This includes answering a series of questions about the assigned task:

- Are you fit for duty and trained for the task?
- Is the potential for movement of equipment controlled?
- Is the work area clear and controlled?
- Are work conditions and scope as planned?
- Have all hazards been identified and controlled?
- Do you have a plan of action in case of emergency?
- Have you read and do you understand the work scope, planned approach, permit requirements, isolation points and JSA?
- Are tools and equipment in good condition and correct for the task?
- Can the job proceed safely?

If the answer to any of these questions is "NO", stop work and alert your Supervisor. You have the responsibility and the authority, without fear of reprimand or retaliation, to immediately stop any work activity that presents a danger to you, your co-workers, our clients, the public or the environment.

3.18 Safety Observation Program

Safety observations are behavior-based and provide a systematic feedback process between line personnel and supervision to proactively identify opportunities for safety improvement in work areas.

Employees engaged in work activities are often the most knowledgeable about the hazards of their work and can provide valuable feedback on unsafe conditions and unsafe practices, which may require corrective action.

The I CARE Focused Safety Observation Program is a tool for employees to provide information on actual or potential safety hazards that they observe in their workplace, which if left unreported may result in an accident and or injury. This program also provides a mechanism for recommending corrective actions.

- The Safety Observation Program:
- Identifies practices that could cause accidents, injuries, or damage
- Identifies specific needs for coaching and training
- Checks the adequacy of the HSP, AHAs, JSAs, and compliance with general site rules and other procedures
- Monitors the effectiveness of training.

The SHSO must develop a schedule for conducting I CARE safety observations. A general guideline for the number of observations in a week is one observation per 10 man-hours on the project. The schedule for observation(s) shall be communicated to site personnel.

The employee conducting the safety observation shall record their findings on the I CARE Observation Reporting Card (Appendix I), as required by CMS-710-05-PR-02600, "I CARE HSE Process". Tasks or items that require follow-up because of at-risk potential must be addressed immediately by the SHSO. Items with lesser risk should be discussed in the next tailgate safety meeting. The action items and corrective actions, including dates and responsible person(s) shall be documented on the Safety and Occupational Health Deficiency Tracking Log (Appendix D), maintained, and available for inspection.

All CB&I personnel, subcontractors, and visitors will be familiar with site hazards and will strictly adhere to the appropriate safety procedures prescribed in this SSHP.

3.19 Safety and Health Bulletin Board

A safety and health bulletin board shall be maintained in an area commonly accessed by workers. The bulletin board shall be maintained current, in clear view of on-site workers, and protected against the elements and unauthorized removal. The RM shall evaluate the content of the bulletin board each week, at a minimum and update if necessary. It shall contain at least the following safety and health information:

- Map denoting the route to the nearest emergency care facilities.
- Emergency telephone numbers.

- Copy of current AHA(s) shall be mounted on or adjacent to the bulletin board or state the location, which will be accessible on the site by all workers.
- Occupational Safety and Health Administration Form 300A shall be posted in accordance with OSHA requirements and mounted on or adjacent to the bulletin board or state the location, which will be accessible on the site by all workers.
- Date of last lost workday injury.
- OSHA / Texas Safety and Health Poster.

4.0 Project Hazards and Hazard Control Measures

There are numerous chemical, physical, and environmental hazards potentially present at the site. These hazards, if not properly controlled, can cause harm to project personnel, visitors, and the public. The anticipated hazards at the site and the recommended control measures are presented in this section.

4.1 Chemical Hazards

The laboratory analytical results from the samples collected at the site indicated elevated concentrations of certain chemicals that the Texas Commission on Environmental Quality (TCEQ), the Agency for Toxic Substances and Disease Registry (ATSDR), and the EPA considered to be excessive and consequently require cleanup. There is potential for personnel exposures to the chemical hazards from the site contaminants during cleanup activities.

The hazard information regarding the chemical contaminants of concern is summarized as follows:

- ***Arsenic.*** Arsenic compounds target the liver, kidneys, skin, lungs, and lymphatic system (lung and lymphatic cancer). Symptoms of exposure include dermatitis, ulceration of the nasal septum, gastrointestinal (GI) disturbances, respiratory irritation, hyper pigmentation of the skin, and degeneration of the peripheral nervous system (PNS) and central nervous system (CNS) (NIOSH, 2005). Arsenic is considered a confirmed human carcinogen (ACGIH, 2012). PEL-TWA: 0.01 mg/m^3 for inorganic arsenic; immediately dangerous to life and health (IDLH): NIOSH Potential Occupational Carcinogen [5 mg/m^3]; threshold limit value [TLV] -TWA: 0.01 mg/m^3.) TLV Basis: lung cancer (ACGIH, 2012).

- ***Benzene.*** Benzene targets the eyes, skin, respiratory system, blood, CNS, and bone marrow. Symptoms of exposure include irritation eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, lassitude (weakness, exhaustion); dermatitis; bone marrow depression; (potential occupational carcinogen). Benzene is a confirmed human carcinogen (ACGIH, 2011). (PEL-TWA: 1 part per million [ppm], STEL: 5 ppm; IDLH: Carcinogen [500 ppm]; TLV-TWA: 0.5 ppm, 2.5 ppm TLV-STEL with a skin notation.) TLV Basis: Leukemia (ACGIH, 2011).

- ***m*-**Cresol. Cresol targets the eyes, skin, mucous membranes, central nervous system, lungs, liver, kidneys, and pancreas. Symptoms include irritation of the eyes, skin, and mucous membranes; central nervous system effects may be confusion, depression, respiratory failure; dyspnea (breathing difficulty, irregular rapid respiration, weak pulse; eye, skin burns; dermatitis lung, liver, kidney, pancreas damage. (PEL-TWA: 5 parts per million [ppm][SKIN]; IDLH: 250 ppm; threshold limit value (TLV) TLV-TWA 20 mg/m^3 with a skin notation (ACGIH, 2009).

- ***Ethylbenzene.*** Ethylbenzene targets the central nervous system, skin, eyes, and respiratory system. Symptoms of exposure include irritated eyes, skin, and mucous membranes; headaches, narcosis, dermatitis, and coma. Ethylbenzene is a confirmed animal carcinogen with unknown relevance to humans (ACGIH, 2011). (PEL-TWA: 100 ppm; IDLH: 800 ppm [10% LEL]; TLV-TWA: 100 ppm, TLV-STEL: 125 ppm.) TLV Basis - Critical Effect(s): upper respiratory tract and eye irritation; CNS impairment (ACGIH, 2011).

- ***Naphthalene.*** Naphthalene targets the eyes, skin, blood, liver, kidneys, and central nervous system. Symptoms of exposure include irritation of the eyes; headache, confusion, excitement, malaise (vague feeling of discomfort); nausea, vomiting, abdominal pain; irritation bladder; profuse sweating; jaundice; hematuria (blood in the urine), renal shutdown; dermatitis, optical neuritis, and corneal damage. (PEL-TWA: 10 ppm; IDLH: 250 ppm, TLV-TWA: 10 ppm).

- ***Lead.*** Lead targets the eyes, gastrointestinal tract, central nervous system, kidneys, blood, and gingival tissue. Symptoms of exposure include lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation eyes; hypotension (NIOSH, 2005). Lead is a confirmed animal carcinogen with unknown relevance to humans (ACGIH, 2012). (PEL-TWA: 0.050 mg/m^3; IDLH: 100 mg/m^3; TLV-TWA: 0.05 mg/m^3.) TLV Basis: CNS impairment; peripheral nervous system impairment; hematological effects (ACGIH, 2012).

- A brief description of the exposure limits used is provided below:

- Threshold limit values are guidelines for occupational exposures established by the ACGIH:

  – Threshold Limit Value-TWA—Airborne concentrations of substances, generally expressed as an 8-hour TWA and represent conditions under which it is believed that nearly all workers may be repeatedly exposed day after day for a 40-hour workweek without adverse health effects.

  – Threshold Limit Value-STEL—the 15-minute TWA airborne concentrations of substances that should not be exceeded at any time during a workday, even if the 8-hour TWA is within the TLV-TWA.

- Immediately Dangerous to Life or Health—The National Institute of Occupational Safety and Health defines IDLH as, air concentrations, which represent the maximum concentration from which, in the event of respirator failure, one could escape within 30 minutes without a respirator and without experiencing any escape-impairing or irreversible health effects

- Recommended Exposure Limit—The TWA concentration exposure for up to a 10-hour workday during a 40-hour workweek, recommended by the NIOSH.

- Permissible Exposure Limit—the 8-hour TWA, STEL, or ceiling concentration above which workers cannot be exposed. Permissible exposure limits are enforceable by OSHA.

A combination of air monitoring, engineering controls, administrative controls, PPE, and decontamination procedures will maintain chemical exposures to personnel at safe levels.

4.1.1 Operational Chemicals/Hazard Communication Program

Hazardous chemicals will be brought to project sites for use in activities supporting the planned work. These chemicals are used as fuels, construction materials, solvents, cements, cleaning solutions, paints, etc. The use of operational chemicals is regulated by OSHA under the Hazard Communication Standard (29 CFR 1910.1200). A written hazard communication program has been established as CMS-710-01-PR-00400, Hazard Communication, which includes the following elements:

- ***Container Labeling***—Project personnel will ensure that all containers are labeled according to their contents. This requirement will apply to containers from manufacturers and those produced on site by operations. The labels on all incoming and outgoing containers will be checked for identity, hazard warning, and the name and address of the responsible party.
- ***Material Data Safety Sheets***—MSDSs will be provided on site for each hazardous chemical used or known to be present at the site.
- ***Employee Information and Training***—Employees will receive annual chemical hazard safety training, supplemented by informal daily safety meetings. Project specific chemical hazards will be communicated to employees through an initial site orientation meeting and daily safety meetings.

The written hazard communication program will be available at the project site for personnel review and provides requirements for the safe use of operational chemicals. Proper ventilation and personal protective equipment (PPE) shall be used when working with operational chemicals. Air monitoring may be performed as needed to assess and control exposures resulting from the use of operational chemicals. Both an inventory list of the operational chemicals (Hazardous Chemical Inventory List) used and a Material Safety Data Sheets (MSDS) or Safety Data Sheets (SDS) for operational chemicals shall be made available at the project site (Appendix E).

4.2 Physical Hazards

There are numerous physical hazards associated with site operations that require consideration. Some of these physical hazards are as follows:

- Noise

- Slips, trips, and falls
- Hot work
- Use of ladders and scaffolding
- Use of small tools
- Use of cutting tools
- Use of construction and mechanized equipment
- Operation of motor vehicles
- Material handling
- Work near or along active roadways
- Hazardous energies (i.e., electrical, mechanical, and pressure)
- Intrusive activities
- Excavation
- Utility avoidance
- Portable generator use
- Confined space entry
- Dust

4.2.1 Noise

There are many sources of noise at the project site. Noise is generated from the use of equipment and tools. Hearing loss, resulting from occupational exposure to noise, can be prevented. A hearing conservation program will be implemented at the site. As part of the criteria for the medical surveillance program, audiometric testing is conducted annually. The RM, or designee, will conduct noise surveys as necessary to determine if engineering controls should be implemented and/or if hearing protection is adequate. Hearing protection is also required to be worn by personnel working with or around equipment, power tools, and as noise monitoring indicates. Warning signs shall be posted in areas where noise (greater than 85 decibels) necessitates the use of hearing protection.

4.2.2 Slips, Trips, and Falls

The following details procedures to prevent slips, trips, and falls:

- Personnel shall keep working areas clean and orderly. Tools, equipment, and materials shall be used and stored in a fashion to minimize tripping hazards.
- Small, loose items or debris shall not be left lying around the work areas, particularly in areas where personnel walk.
- Walkways shall be kept free of obstacles. Openings in walkways shall be repaired immediately, if possible. If not immediately repaired, the area shall be roped off or closed until repairs can be made.
- Spills shall be cleaned up immediately.

- Personnel shall take extra precautions, such as establishing firm handholds, wearing suitable footwear, and proceeding slowly when walking on surfaces while wet.
- Personnel shall not jump from elevated places or equipment.
- Personnel using hand and mechanical tools shall position themselves properly and consider the resulting events if a tool slips or suddenly moves.
- Personnel shall not walk or climb on piping, valves, fittings, or any other equipment not designed as walking surfaces.
- Stairways, walkovers, or ramps shall be installed where personnel must walk or step over equipment in the course of their normal duties.
- Electrical extension cords and electrical wiring shall be kept clear of walking and working areas and/or covered, buried, or otherwise secured.
- Running is prohibited on job sites unless under emergency conditions.
- Elevated work, where a potential fall exists, shall be performed using appropriate ladders and/or fall protection (i.e., full body harness and lanyard or guardrails). No employee may be exposed to a fall of over 6 feet without being adequately protected.

4.2.3 Hot Work

Hot work (e.g., welding, burning, and cutting) conducted on site shall comply with the following requirements:

- The RM (or designee) will establish areas approved for welding, cutting, and other hot work.
- The RM (or designee) is responsible for authorizing welding, cutting, and other hot work in areas not specifically designed or approved for such operations.
- All personnel shall be protected from welding radiation, flashes, sparks, molten metal, and slag.
- All welding, burning, and cutting equipment shall be inspected daily by the operator. Defective equipment shall be tagged and removed from service, replaced or repaired, and re-inspected before again being placed in service.
- All welders, cutters, and their supervisors shall be properly trained in the safe operation of their equipment, safe welding/cutting practices, and welding/cutting respiratory and fire protection.
- The handling of compressed gas cylinders shall comply with the requirements established in CMS-710-02-PR-02300, Welding, Cutting and Heating.
- Cutting, welding, or other hot work shall be permitted only in areas that are or have been made fire safe.

- Cutting or welding shall not be permitted in the following situations:
  - In areas not authorized by the RM (or designee).
  - In the presence of flammable or explosive atmospheres (i.e., mixtures of flammable gases, vapors, liquids, or combustible dusts with air), or explosive atmospheres that may develop inside un-cleaned or improperly prepared drums, tanks, or other containers, and equipment that has previously contained such materials.
  - In any area where combustible gas indicator readings are in excess of 10 percent of the lower explosive limit.
  - On storage or process vessels or lines in service that contain flammable or combustible liquids, gases, vapors, or solids.
- Before any welding, cutting, or other hot work is permitted, the area shall be inspected by the RM (or designee) to verify that the following requirements have been met:
  - Cutting and welding equipment to be used shall be in safe operating condition and in good repair.
  - Where practical, all combustible material shall be relocated at least 50 feet away from the hot work site. Where relocation is impractical, combustibles shall be protected with flameproof covers or otherwise shielded.
  - At a minimum, two fully charged and operable fire extinguishers, appropriate for the type of possible fire (2-A:20:B:C), shall be available at the work area.
  - A fire watch shall be required whenever hot work is performed in hazardous locations.
  - Combustible gas indicator readings shall be taken to verify the work area is free of flammable/combustible gases and vapors, when there is any indication that flammable/combustible gases and vapors may be present.
  - The work area is free of toxic contaminants at concentrations in excess of established exposure limits unless engineering controls have been implemented or all personnel who will work in the area have been provided respiratory protection and protective apparel appropriate for the degree of exposure.
  - When hot work is to be performed on tanks or other vessels that contain or have contained flammable or combustible liquids, the vessel shall be properly isolated, purged, cleaned, or inerted as appropriate, to reduce the concentrations of flammable/combustible vapors to safe levels.
  - A Hot Work Permit (Appendix D) shall be completed by the RM (or designee), reviewed with personnel who will perform the hot work, and posted near the job site.
  - The Hot Work Permit is good only for the date issued and is valid only for the 8-hour shift for which it is issued. If the work area is completely vacated by personnel, such as, during lunch, a new permit may need to be issued.
  - If at any time during the hot work operation a change in conditions at the work site is suspected, such as a release of flammable gases or vapors in the work area, work shall be stopped immediately and the RM (or designee) shall be notified. Such work stoppage invalidates the Hot Work Permit, and a new permit shall be

completed after inspections and tests have been performed by the RM (or designee).

No erasures or changes of dates on Hot Work Permits shall be permitted.

4.2.4 Use of Ladders and Scaffolds

Ladders and scaffolding shall only be used at the site under the following conditions:

- Ladder use shall comply with CMS-710-02-PR-00500, Ladders.
- Scaffold erection and use shall comply with all applicable OSHA regulations. A trained competent person shall supervise all scaffold erection and use.

4.2.5 Use of Small Tools

Hand and power tools shall be used, inspected, and maintained in accordance with the manufacturer's instructions and recommendations and will be used only for the purpose for which designed. A copy of the manufacturer's instructions and recommendations will be maintained at the project site. The following requirements shall be adhered to:

- Tools designed to accommodate guards will be equipped with such guards when in use.
- Tools shall be inspected to ascertain safe operating conditions and are to be kept clean and free of accumulated dirt.
- Electric power tools and extension cords shall be used with ground fault circuit interrupter.
- Portable power cords will be designated as hard usage or extra hard usage and shall not be used if damaged, patched, oil-soaked, worn, or frayed.
- Connections on pneumatic lines shall be secured with a safety lashing.
- Hand tools that may be utilized by field, such as hammers and chisels, shall be inspected and dressed if necessary to remove mushroomed heads, which may separate and become projectile hazards.

4.2.6 Use of Cutting Tools

Proper cutting tools, such as scissors, snips, side cutters, etc., are to be used when possible in lieu of box cutters or knives. Furthermore, if box cutters are determined to be the appropriate tool for the job, the only type that should be used is the design that has a self-retracting blade capability. Employees must utilize appropriate PPE (leather gloves) to allow for further protection. There are many cutting tool manufacturers that offer a variety of safety knives, which are available for all types of cutting. The RM, or designee, shall evaluate each cutting task in order to determine that the safest and most appropriate cutting tool is used. The RM, or designee, shall also provide

training in the proper use of the selected cutting tool. The following evaluation shall be made for each cutting task:

- Determine that hand knives are actually the most practical tool for the task. Where possible, use the safest cutting tool for the job (e.g., scissors, snips, or wire strippers).
- If a knife happens to be the correct tool, keep the knife sharp and clean. A dull blade can cause accidents because more force is needed to cut an object. However, a knife or any other unprotected blade tool must be the last resort when choosing a cutting tool.
- Maintain a supply of either replacement knives and/or blades and make them readily available.
- Cut away from yourself, ending the knife stroke away from your body. Hold the item you are cutting firmly, and do not cut downwards and towards your body. Cut into the air or onto hard surface.
- Confirm that appropriate PPE (e.g., gloves) specific to the task is available to employees and used when the possibility of injury exists.
- Personal knives (e.g., pocketknives) shall not be considered as a tool for any type of work-related cutting. Employees are required to ask for a cutting tool from their supervisor, thereby resulting in an additional review of using the right cutting tool for the job.
- The RM, or designee, is to inspect material cutting activities to verify that leather gloves are being used to protect hands.

4.2.7 Use of Heavy and Mechanized Equipment

Excavators, front-end loaders, and other types of specialized equipment may be used to accomplish the work at the project. The use of all this equipment can be dangerous. Extra care shall be exercised in its use and while working in the vicinity of this equipment.

4.2.7.1 Heavy Construction Equipment

There may be various types of construction equipment that will be used during this project. All operators of this equipment shall be familiar with the requirements for inspection and operation of the equipment that they will be using. Before equipment is placed into use and on a daily basis, the operator is to inspect and verify that it is in safe operating condition, as described in Section 3.5. The following guidelines shall be adhered to while operating construction equipment:

- Equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded.
- Getting on or off of equipment while it is in motion is prohibited.

- Equipment will be operated in accordance with the manufacturer's instructions and recommendations.
- Determinations of road conditions and structures will be made in advance to verify that clearances and load capacities are safe for the passage of equipment.
- All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done. Equipment designed to be serviced while running is exempt from this requirement.
- Buckets, blades, dump bodies, and similar equipment will be either fully lowered or blocked when being repaired or when not in use. All controls shall be in a neutral position, with the engines stopped and brakes set, unless work being performed on the machine requires otherwise.
- No guard, safety appliance, or device will be removed from machinery or equipment, or made ineffective except for making immediate repairs, lubrications, or adjustments, and then only after the power has been shut off. All guards and devices will be replaced immediately after completion of repairs and adjustments and before power is turned on.
- Mechanized equipment will be shut down prior to and during fueling operations. Closed systems, with automatic shut-off, which prevent spillage if connections are broken, may be used to fuel diesel powered equipment left running.
- Each piece of construction equipment and other similar equipment will be equipped with at least one dry chemical or carbon dioxide fire extinguisher with a minimum rating of 10-B:C.
- Personnel will not work, pass under, or ride in the buckets or booms of loaders in operation.
- All self-propelled construction equipment, whether moving alone or in combination, shall be equipped with a reverse signal alarm.
- Seat belt use is required while operating equipment.

Spotters for the operator will be the only personnel allowed in the vicinity of the construction equipment. Spotters shall stay out of the boom radius area. Personnel needing to approach mobile equipment while operating shall observe the following protocols:

- Make eye contact with the operator (and spotter)
- Signal the operator to cease equipment activity
- Approach the equipment only after the operator has given signal to do so.

4.2.8 Operation of Motor Vehicles

All company owned, leased, or rented vehicle operations shall comply with the requirements of *Legacy Shaw Environmental Procedure HS800*, "Motor Vehicle Operation: General Requirements" and *Legacy Shaw E & I Procedure No. HS810*, "Commercial Motor Vehicle Operation and Maintenance" (Current Revision). CB&I vehicles shall be inspected on a weekly basis. Additionally, all CB&I vehicles shall be inspected prior to any trip, which is 50 miles or greater. Vehicle inspections shall be documented on the Vehicle Inspection form (Appendix D).

Subcontractors operating motor vehicles at the site shall comply with all federal, state, and local traffic regulations. Subcontractors shall only use vehicles that are in good condition and safe to operate. Subcontractors shall inspect vehicles routinely used at the project on a weekly basis and submit the inspection documentation to the RM. Weekly vehicle inspections shall be documented on the Vehicle Inspection form (Appendix D).

All personnel shall drive defensively and wear seat belts while vehicles are in motion. All CB&I employees are required to attend a defensive driving training course.

Operators of vehicles used while working at the site may only use cellular telephones with hands-free devices while the vehicle is in motion. Prior to using a hand-held cellular phone, drivers shall find a safe place to bring their vehicle to a stop. This requirement does NOT preclude passenger(s) from using cellular phones while the vehicle is in motion. The use of headphones or earphones is prohibited while operating a motor vehicle.

Since backing accidents at these types of projects are frequent, the following guidelines shall be observed:

- Backing of vehicles shall be avoided when possible.
- Extra care shall be taken to back vehicles when unavoidable.
- Back-up slowly and back-up the shortest distance necessary to accomplish the maneuver.
- When parking vehicles, vehicles shall be backed into the space whenever possible.
- Before entering a vehicle, which has been parked, the driver shall first physically perform a 360° walk around the vehicle to observe all areas and especially the area behind the vehicle.

4.2.9 Material Handling

Various materials and equipment may be handled manually during project operations. Care should be taken when lifting and handling heavy or bulky items to avoid back injuries. The

following fundamentals address the proper lifting techniques that are essential in preventing back injuries:

- Size, shape, and weight of the object to be lifted shall first be considered. No individual employee is permitted to lift any object that weighs over 60-pounds. Multiple employees or the use of mechanical lifting devices is required for objects over the 60-pound limit.
- Anticipated path to be taken by the lifter should be inspected for the presence of slip, trip, and fall hazards.
- Feet shall be placed far enough apart for good balance and stability (typically shoulder width).
- Worker shall get as close to the load as possible. Legs shall be bent at the knees.
- Back shall be kept as straight as possible and abdominal muscles should be tightened.
- Twisting motions should be avoided when performing manual lifts, such as, auger flights.
- To lift the object, the legs are straightened from their bending position.
- Take small turning steps without twisting the knees or the back if it is necessary to turn with the load.
- A worker shall never carry a load that cannot be seen over or around.
- When placing an object down, the stance and position are identical to that for lifting. The legs are bent at the knees and the object lowered.

When two or more workers are required to handle the same object, coordination is essential to equally divide the weight between the individuals carrying the load and to make a uniform lift. When carrying the object, each worker, if possible, shall face the direction in which the object is being carried. In handling bulky or heavy items, the following guidelines shall be followed to avoid injury to the hands and fingers:

- A firm grip on the object is essential; leather gloves shall be used if necessary.
- Hands and object shall be free of oil, grease, and water, which might prevent a firm grip, and the fingers, shall be kept away from any points that could cause them to be pinched or crushed, especially when setting the object down.
- Item shall be inspected for metal slivers, sharp or jagged edges, burrs, and rough or slippery surfaces prior to being lifted.

4.2.10 Hazardous Energies (Electrical, Mechanical, and Pressurized Systems)

All portable electrical equipment and extension cords shall be protected with a ground fault circuit interrupter as part of the circuit. Applicable OSHA standards for electrical power, 29 CFR 1926 Subpart K should be followed.

Only qualified electricians may work on electrical circuits. Qualified personnel shall be trained with the proper use of the special precautionary techniques, PPE, including arc-flash, insulating and shielding materials, and insulated tools and test equipment.

Live parts to which an employee might be exposed shall be put into an electrically safe work condition (de-energized) before an employee works on or near them, unless it can be demonstrated that de-energizing introduces additional or increased hazards or is infeasible due to equipment design or operational limitations. This rule applies to all electrical work, including changing a light bulb.

Where work is performed in locations containing un-insulated energized overhead lines that are not guarded or isolated, precautions shall be taken to prevent employees from contacting such lines directly with any unguarded parts of their body or indirectly through conductive materials, tools, or equipment. Refer to Table 2, "Minimum Clearance from Energized Overhead Electric Lines," when working near overhead power lines. Where the work to be performed is such that contact with un-insulated energized overhead lines is possible, the lines shall be de-energized and visibly grounded at the point of work, or suitably guarded.

Employees working in areas where electrical hazards are present shall be provided with, and shall use PPE that is designed and constructed for the specific part of the body to be protected and for the work to be performed, as required by Section 130.7 of National Fire Protection Association (NFPA) 70 E (2012), *Standard for Electrical Safety in the Workplace*.

Employees shall use insulated tools and/or handling equipment when working inside the Limited Approach Boundary of exposed live parts where tools or handling equipment might make accidental contact. Insulated tools shall be protected from damage to the insulating material.

Before starting each electrical job, the qualified employee in charge shall conduct a job briefing with the employees involved. The briefing shall cover such subjects as hazards associated with the job, work procedures involved, special precautions, energy source controls, and PPE requirements.

Only hard or extra-hard usage extension cords shall be used. Extension cords, power tools, and lighting equipment shall be inspected before each use, protected from damage, and kept out of wet areas.

The handling of compressed gas cylinders shall comply with the requirements established in CMS-710-02-PR-02300, Welding, Cutting and Heating. All pressure vessels shall be designed, inspected, and tested in accordance with ASTM International standards. All air compressors and hoses shall be inspected before use, operated, and maintained by designated, qualified personnel. All air compressors shall be equipped with a pressure gauge and relief-valve, and only be operated at design pressures. Chicago fittings shall be secured together with tie-wire or equivalent and secured with safety lashings.

Lockout/tagout procedures are to be implemented during servicing or maintenance of machines and equipment to preclude the unexpected release of stored energy or inadvertent energization. These procedures are contained in CMS-710-02-PR-01500, Control of Hazardous Energy and comply with the requirements established in 29 CFR 1926.417.

Subcontractors may implement their own lockout/tagout procedure if the RM has approved its use and verifies that it is no less protective than the CB&I Procedure.

4.2.11 Intrusive Activities

Intrusive activities are defined as any activity that produces a man-made cut, cavity, trench, or depression into the earth's surface formed by earth removal or any activity that results in an object placed into the earth below the surface. These activities include excavating, drilling, augering, boring, shoveling, fence post driving, driving stakes, etc. Intrusive activities can be dangerous and can result in severe personal injury or death. Intrusive activities can also cause significant property damage to both utilities/structures and operational equipment. Breaching underground utilities can result in electrocution from damaged electric lines, fires from broken fuel/gas lines, and disruption of telephone service.

Before any intrusive activity at the site begins, positive steps shall be taken to determine if the area contains underground utilities or overhead hazards. It is important to understand that underground utilities have been found in areas that have been properly investigated and thought not to have utilities present. Personnel shall always be alert for marking tape, wires, pipes, previously disturbed soils, crushed stone or sand bedding/backfill, containers, discolored soil, or anything else unusual.

The procedure detailed in *Legacy Shaw Procedure HS 308*, "Underground/Overhead Utility Contact Prevention" shall be followed. The procedure is designed to identify and protect underground installations or indicate that none exists. Additionally, subcontract assistance will be on site as a supplement to Texas811, to assist in the utilities identification/markings.

4.2.12 Utility Avoidance

Excavation activities can result in employee electrocution from damaged aboveground and underground electric lines, fires from underground broken fuel/gas lines, disruption of underground electric, water, sewer, telephone, cable, and propane service, disruption of aboveground electric, telephone, fiber optic, and TV cable lines, and damage of supporting infrastructure such as guy wires and transformers. Breaching aboveground and underground utilities can also cause significant property damage to both utilities/structures and operational equipment. Underground utilities have been found in many areas that have been properly investigated and thought not to have utilities present. Personnel shall always be alert for marking tape, wires, pipes, previously disturbed soils, crushed stone or sand bedding/backfill, containers, discolored soil, or anything else unusual and shall always observe overhead for utilities when entering a work area.. In addition, watch out when working near overhead lines. The wind can quickly move them horizontally or vertically, moving the danger zone to new positions.

Prior to conducting any project site activities, the RM must ensure that all existing underground/overhead utilities in the work area are located per the state or local mark-out protocols. Documentation of utility mark-outs must be completed using the Utility Mark-out Documentation form (Attachment 3, *Legacy Shaw Procedure HS308*). No boring/excavation work is to be performed until all utility mark-outs are verified. Texas 811, along with the utility marking subcontractor will determine that all aboveground and underground installations and utilities are identified and physically marked, prior to any intrusive activities beginning.

The protocols in CMS-710-02-PR-01600, Excavation and Trenching, and *Legacy Shaw Procedure HS 308,* Underground/Overhead Utility Contact Prevention, (Current Revision) will be followed.

4.2.12.1 Underground Utilities

The utility marking subcontractor will determine the locations of the underground utilities prior to commencement of work.

Only hand digging is permitted within 3 feet of underground high voltage, product or gas lines. Once the line is exposed heavy equipment can be used but must remain at least 3 feet from the exposed line. Therefore, only experienced, demonstrably proficient equipment operators will be used.

4.2.12.2 Overhead Utilities

When working around overhead utilities a distance of at least 10 feet will be maintained from power lines up to 50 kV. For voltages over 50kV, add 0.4 inches per kV to obtain the safe distance between equipment and power lines. If voltage is unknown, remain at least 45 feet from overhead power lines.

Prior to performing the work, a site survey will be completed by the crew foreman (field team leader) and documented in accordance with *Legacy Shaw Procedure HS308*. De-energize, ground, remove, or insulate lines prior to working in areas when it is determined that safe clearance cannot be maintained. Signage will be displayed in areas with overhead utilities. Foremen will review overhead electrical lines with the equipment operators prior to commencing work at each location. A dedicated spotter will be used at all times when equipment has potential to come within the clearances specified in Table 2.

If contact is deemed unavoidable, stop work in the area and consult with the client and the HSE PROGRAM MANAGER to evaluate other options prior to engaging in the activity.

4.2.13 Portable Generator Use

Refer to the generator manufacturer's instructions for safe operation. Never use a generator in enclosed or partially enclosed spaces due to the quick build-up of high levels of carbon monoxide. The concentration of carbon monoxide shall be monitored when using generators in areas of poor ventilation. The concentration of carbon monoxide in the work area shall not be allowed to exceed 25 ppm.

Keep the generator dry and do not use in rain or wet conditions. To protect from moisture, operate it on a dry surface under an open, canopy-like structure. Dry your hands, if wet, before touching the generator. Use a heavy duty, outdoor-rated extension cord that is rated (in watts or amps) at least equal to the sum of the connected appliance loads. Check that the entire cord is free of cuts or tears and that the plug has all three prongs, especially a grounding pin. Ground generators by using a hand-inserted ground-rod, if recommended by the manufacturer.

Before refueling the generator, turn it off and let it cool down. Gasoline spilled on hot engine parts could ignite. A 2-A:40-B:C fire extinguisher shall be readily available in locations where a generator is being used.

Hearing protection shall be used by personnel when working near a generator.

4.2.14 Confined Space Entry

A confined space is defined as a space large enough and so configured that an employee can bodily enter and perform assigned work, has limited means for entry or exit, and is not designed for continuous employee occupancy. Confined space work may pose additional hazards such as chemical exposures, flammable/explosive atmospheres, electrocution, oxygen deficiency, etc. CB&I has detailed training for confined space entry: only properly trained personnel shall supervise and participate in confined space entry procedures or serve as standby attendants.

Personnel shall never enter a confined space without a permit issued by the RM (or designee). Entering a trench greater than 5 feet deep, entering a sewer, or entering a tank may be potential confined space entries. If personnel are uncertain about whether their activity involves a confined space entry, they shall stop work and notify the RM. CMS-710-02-PR-01700, Confined Space Entry (Current Revision) shall be followed for all confined space entries during this project.

All confined spaces are initially considered permit required. Under certain conditions, a space may be reclassified as a non-permit confined space provided the RM approves the reclassification and the space meets the criteria outlined in CMS-710-02-PR-01700, Confined Space Entry.

4.3 Workplace Reproductive Hazards

Substances that affect the ability to have healthy children are called reproductive hazards. The components of the reproductive process, which can be impacted by reproductive hazards, are chromosomal replication, sexual function, ovulation, conception/fertilization, embryo implantation, placental function, fetal development, labor, delivery, and child development. Radiation (e.g., ionizing, radar, etc.), many chemicals, drugs (legal and illegal), cigarettes, stress, noise, and heat are examples of reproductive hazards. There is potential at the site for exposure to reproductive hazards, such as, welding, heat, noise, and stress.

National Institute for Occupational Safety and Health recommends workers take the following steps to ensure their own safety:

- Store chemicals in sealed containers when they are not in use.
- Wash hands before eating, drinking, or smoking.
- Avoid skin contact with chemicals.
- If chemicals contact the skin, follow directions for washing provided in the MSDS. Employers are required to provide an MSDS (SDS) for all hazardous materials used in the workplace.
- Become familiar with the potential reproductive hazards used in your workplace.
- Always take measures to prevent home contamination. To prevent home contamination:
  - Change out of contaminated clothing and wash with soap and water before going home.
  - Store street clothes in a separate area of the workplace to prevent contamination.
  - Wash work clothing separately from other laundry (at work if possible).
  - Avoid bringing contaminated clothing or other objects home.

- Participate in all safety and health education, training, and monitoring programs offered by your employer.
- Learn about proper work practices, engineering controls, and PPE (i.e., gloves, respirators, and personal protective clothing) that can be used to reduce exposures to hazardous substances.
- Follow the safety and health work practices and procedures implemented by your employer to prevent exposures to reproductive hazards in the workplace.

The safety and health measures, practices, procedures, and rules contained in this SSHP are in place to minimize the exposures and effects of workplace reproductive hazards.

4.4 General Work Rules

While all the procedures outlined in this SSHP are required, the following list presents general work rules that will be enforced by the RM and Subcontractor Supervisors:

- Personnel are not allowed on site without the prior knowledge and consent of the RM (or designee).
- Loose jewelry, clothing, or long hair is not permitted on or near equipment with moving parts.
- Hair, which extends beyond the collar of a shirt, shall be neat and contained in a manner as to not cause a risk to the employee.
- Personnel shall not enter a restricted area unless authorized.
- Whenever possible, avoid contact with contaminated (or potentially contaminated) surfaces. Walk around (not through) puddles and discolored surfaces. Do not kneel or set equipment on potentially contaminated surfaces.
- All regulated work zones, as established on the site, shall be observed. Entry into a CRZ and Exclusion Zone shall be by prior notification and authorization of the RM (or designee). All required PPE shall be worn prior to entering these zones.
- Contaminated equipment and PPE (if not discarded) shall not be removed from the CRZ until they have been properly cleaned.
- Legible and understandable labels shall be affixed prominently to the containers of waste materials.
- Food, beverages, unapplied cosmetics, and tobacco products are not allowed in regulated work zones – these are only allowed in designated areas of the Support Zone.
- Beards, facial hair, or other facial obstructions that interfere with respirator fit will preclude admission to the Exclusion Zone when respirators are required.

- Field personnel are to observe each other for signs and symptoms of toxic material exposures. These signs and symptoms include, but are not limited to:
  - Changes in complexion and skin color.
  - Changes in coordination.
  - Changes in demeanor.
  - Excessive salivation and pupillary response.
  - Changes in speech pattern.
- Any detected effects of toxic exposure shall be reported to the RM (or designee) immediately.
- An emergency eyewash unit shall be located immediately adjacent to employees who handle hazardous or corrosive materials. All operations involving the potential for eye injury, splash, etc. shall have eyewash units locally available capable of delivering at least 0.4 gallons per minute for at least 15 minutes.
- If on-site activities, including decontamination, continue later than dusk, adequate lighting shall be provided.
- Field activities shall be suspended during severe weather such as thunderstorms, lightning, tornado warnings, and winter storm warnings.
- Damaged PPE or clothing shall be immediately repaired or replaced, as appropriate.
- Personnel shall thoroughly wash their hands and face before eating, smoking, or drinking.
- Unauthorized removal of materials from the project is prohibited.
- Possession of controlled substances and prohibited items, such as alcohol, illicit drugs, firearms, and weapons while working on site is forbidden.
- Operations involving the potential for fire hazards shall be conducted in a manner as to minimize the risk of fire.
- Overhead and underground utility hazards shall be identified and/or located prior to conducting operations.

4.5 Buddy System

The "buddy system" will be used at all times while in an Exclusion Zone – this requires that personnel maintain visual, voice, cellular telephone, or radio communication.

4.6 Environmental Hazards

In addition to chemical and physical hazards, there are environmental hazards that may be present. For the purposes of this SSHP, the environmental hazards are comprised of extreme

ambient temperatures, insects, spiders, rodents, birds, snakes, poisonous plants, fire ants, and sunburn.

4.6.1 Heat Stress

Heat stress is of concern for worker safety during the summer months. Heat stress is caused by a number of interacting factors, including environmental conditions, clothing, PPE, workload, and individual characteristics. Heat stress can cause physical discomfort, loss of efficiency, or personal illness/injury. Refer to CMS-710-01-PR-00600, Heat Stress Prevention and Control, for guidance.

Individuals vary in their susceptibility to heat stress. Factors that may predispose individuals to heat stress include the following:

- Lack of physical fitness and/or obesity
- Insufficient acclimation
- Age
- Dehydration
- Alcohol and/or drug use
- Infection
- Sunburn
- Diarrhea
- Chronic disease
- Medical conditions and/or the use of some medications, such as beta-blockers for high blood pressure

The amount and type of PPE worn, directly influences reduced work tolerance and the increased risk of heat stress. Personal protective equipment adds weight, bulk, reduces the body's capability for thermoregulation (i.e., evaporation, convection, and radiation), and increases energy expenditure.

4.6.1.1 Signs and Symptoms of Heat Stress

If the body's physiological processes fail to maintain a normal body temperature because of excessive heat, a number of physical reactions can occur – ranging from mild to fatal.

These physical reactions to excessive heat include the following:

- Heat rash is caused by continuous exposure to heat and humidity and aggravated by chafing clothes. Heat rash decreases the body's ability to tolerate heat in addition to being a nuisance.
- Heat cramps are caused by profuse perspiration with inadequate electrolytic fluid replacement. Heat cramps cause painful muscle spasms and pain in the extremities and abdomen.
- Heat exhaustion is caused by increased stress on various organs to meet increased demand to cool the body. Heat exhaustion causes shallow breathing; pale, cool, moist skin; profuse sweating; and dizziness.
- Heat stroke is the most severe form of heat stress. Heat stroke symptoms include hot, dry skin; no perspiration; nausea; dizziness; confusion; strong, rapid pulse; coma; and sometimes death. Heat stroke is a serious medical emergency. The affected person shall be cooled down rapidly and medical attention must be given immediately (Section 4.6.1.3 for Heat Stroke Treatment)

The ACGIH (2012) states that excessive heat stress may be marked by one or more of the following symptoms, and an individual's exposure to heat stress should be discontinued when any of the following occur:

- Sustained (several minutes) heart rate is in excess of 180 beats per minute minus the individual's age in years (180-age), for individuals with assessed normal cardiac performance; or
- Body core temperature is greater than 101.3 degrees Fahrenheit (°F) for medically selected and acclimatized personnel; or greater than 100.4°F in unselected, un-acclimatized workers; or
- Recovery heart rate at 1 minute after a peak work effort is greater than 110 beats per minute; or
- There are symptoms of sudden and severe fatigue, nausea, dizziness, or lightheadedness

An individual may be at greater risk of heat stress if:

- Profuse sweating is sustained over hours
- Weight loss over a shift is greater than 1.5 percent of body weight (ACGIH, 2012)

4.6.1.2 Heat Stress Prevention

The following practices will help prevent heat stress:

- Acclimatize workers to hot working conditions.
- Provide plenty of liquids to replace the body fluids lost by perspiration. Fluid intake should be forced because, under conditions of heat stress, the normal thirst mechanism is not adequate to bring about a voluntary replacement of lost fluids.
- Provide personal cooling devices.
- Conduct strenuous field operations in the early morning and provide shade when possible.
- Train personnel to recognize the signs and symptoms of heat stress, its prevention, and treatment.
- Rotate personnel to various job duties and establish adequate work/rest cycles.
- Provide shade or shelter during rest periods.

4.6.1.3 Heat Stress Treatment

Individuals or coworkers expressing the symptoms of heat stress shall notify the RM immediately. At the onset of heat related illness, activities must be halted and treatment initiated. Early detection and treatment of heat stress helps to prevent further serious illness or injury. Individuals that have experienced heat related illness could become more sensitive and predisposed to additional future heat stress related problems.

Heat exhaustion can be alleviated by having the affected person rest in a cool, shaded location and have them drink cool water. To cool down the affected person's body:

- Remove impermeable PPE
- Remove worker from direct sunshine
- Apply copious amounts of cool, not cold, water on them
- Encourage them drink cool water, not cold, if conscious

4.6.1.4 Heat Stroke Treatment

Heat stroke is a true medical emergency. In a heat stroke situation, the body must be cooled immediately to prevent severe injury or death – medical attention must be immediately obtained. The following shall be performed if heat stroke is suspected:

- Transportation of the victim to a medical facility must not be delayed – call 911.
- Prior to transport, remove as much clothing as possible and wrap the victim in a sheet soaked with water.

- Apply cold packs, if available; place under the arms, around the neck, or any other place where they can cool large surface blood vessels.
- If transportation to a medical facility is delayed, reduce body temperature by immersing victim in a cool water bath (however, be careful not to over-chill the victim once body temperature is reduced below 102°F). If this is not possible, keep victim wrapped in a sheet and continuously douse with water and fan.

4.6.1.5 Cold Stress

Cold-related worker fatalities and injuries have resulted from failure to escape low environmental air temperatures, or from immersion in low temperature water. Most hypothermia cases develop in air temperatures between 30 and 50 °F. The single most important aspect of life-threatening hypothermia is a fall in the deep core temperature of the body. Lowering of the core body temperature will likely result in reduced mental alertness, as well as a reduction in rational decision making, or a loss of consciousness with the threat of fatal consequences. The combined temperature/wind chill affect is shown in Table 9-2. To minimize impacts from cold stress, the requirements established in CMS-710-01-PR-00700, Cold Stress Prevention and Control shall be followed. Additional information and precautions given below shall be observed.

Frostbite

Persons working outdoors in temperatures at or below freezing may be frostbitten. Extreme cold for a short time may cause severe injury to the surface of the body, or result in profound generalized cooling, causing death. Areas of the body that have high surface-area-to-volume ratio such as fingers, toes, and ears are the most susceptible.

Local injury resulting from cold is included in the generic term frostbite. There are several degrees of damage. Frostbite of the extremities can be categorized into:

Frost Nip or Initial Frostbite: Characterized by sudden blanching or whitening of skin.

Superficial Frostbite: Skin has a waxy or white appearance and is firm to the touch, but tissue beneath is resilient.

Deep Frostbite: Tissues are cold, pale, and solid; extremely serious injury.

Systemic Hypothermia: This condition is caused by exposure to freezing or rapidly dropping temperature. Its symptoms are usually exhibited in five stages: 1) shivering; 2) apathy, listlessness, sleepiness, and sometimes rapid cooling of the body to less than 95 °F; 3) unconsciousness, glassy stare, slow pulse, and slow respiratory rate; 4) freezing of the extremities; and finally 5) death.

Treatment of cold stress includes bringing the body core temperature back to its normal temperature of 98.6°F. Personnel exhibiting symptoms of cold stress should be brought in to a

warm area and allowed to rest and warm up. Warm, non-alcoholic, decaffeinated drinks (not coffee) or soup should be given to increase body temperature, and re-warming should be gradual.

For frostbite emergency treatment, the victim should be sheltered from the wind and cold and given warm drinks. If superficial, the frozen area should be covered with extra clothing or warmed against the body. Do not apply direct heat and do not pour hot water over or rub the affected area. Warming should be gentle and gradual. If the frostbite is deep (i.e., the area is frozen and hard to the touch), immediate medical attention should be obtained.

Table 9-3 provides a work/warm-up schedule for a 4-hour shift as it relates to temperature and wind speed. This schedule will be applied during all field work.

Hypothermia

For hypothermia emergency treatment, all stages are treated by either passive or active re-warming. This is accomplished by better conservation of the patient's body heat. It is important to note that if a victim is found in a remote area, despite the death-like appearance, the person may be saved. All attempts should be made to revive the victim. Active re-warming means heat is applied to the victim by an external source, either to the skin surface and/or through the core.

Hypothermia treatment includes:

Preventing further heat loss. Remove the victim to a warm, dry place.

Remove wet clothing piece-by-piece and dry underlying skin.

Dress in several layers of warm, dry clothing, giving preference to the central body core rather than the extremities.

Cover the victims head, then wrap the victim in blankets.

If the victim is conscious, help him/her to drink hot fluids.

Monitor oral body temperature every 15 minutes. If the body temperature falls below 98.6 °F, the team member should not be allowed outside until the body temperature returns to normal.

In more severe cases of hypothermia, implement the above actions, but also institute some type of active re-warming, including:

Electric pads or blankets

Hot-air blowers or heaters

Heated blankets or clothes

Use of human body heat

It is important to watch for signs of return of the normal thermoregulatory mechanisms (shivering, teeth chattering, etc.) and to monitor mental status.

The victim should be transferred to a medical facility after the emergency care steps have been initiated and should not be allowed to return to work for at least 48 hours.

Perform CPR if the victim does not exhibit a pulse or not breathing.

Avoidance of cold stress emergencies can be performed by the general practices state below:

Wear layered clothing, including a water-repellent outer layer.

Wear gloves, socks, and a hat that are synthetic or wool insulated.

Remove outer layers of clothing during breaks to prevent inner layer from getting wet from perspiration.

Eat well balance meals and maintain an adequate intake of fluids.

Seek shelter in a warm protected area when signs and symptoms of cold stress become evident.

4.6.1.6 Acclimatization

Physiologically adjusting or acclimatizing personnel to hot conditions is extremely important. National Institute for Occupational Safety and Health recommends a progressive 6-day acclimatization period for un-acclimatized workers before allowing them to work at their full capacity. Under this regimen, the first day of work in hot temperatures is completed at only 50 percent of the anticipated workload and exposure time, and 10 percent is added each day through day six. Six days should be considered the average time needed for worker acclimatization due to each individual's physical condition and his or her ability to adjust to hot and humid environments. It is important to note that employees can lose their acclimatization in a matter of days during time off from work and cooler weather.

4.6.1.7 Physiological Monitoring

Adequate work/rest periods shall be implemented as necessary to prevent heat stress on personnel. However, since individuals vary in their susceptibility to heat stress, CB&I will also utilize physiological monitoring to aid in measuring each individual's response to heat stress. The initiation of physiological monitoring will be required when employees are working in environments exceeding 90°F ambient air temperatures. Physiological monitoring is also required when ambient temperatures exceed 70°F and impermeable garments are worn. Ambient air temperatures shall be recorded on the Ambient Air Temperature/Wind Speed Log (Appendix D) when ambient temperatures exceed 70°F. The two physiological parameters that each individual will monitor are:

- **Heart rate** – Each individual will count his/her radial (wrist) pulse as early as possible during each rest period. If the heart rate exceeds 110 beats per minute at the beginning of the rest period, then the work cycle will be decreased by one-third. The rest period will remain the same. If the heart rate still exceeds 100 beats per minute at the next

rest period, increase the following rest period by one-third. The initial rest period will be at least 5 minutes.

- **Body temperature** – Body temperature, measured orally or through the ear canal, shall also be monitored to assess heat stress. Workers will not be permitted to continue work when their body temperature exceeds 100.4°F or 38°C (degrees Celsius). Monitoring should be conducted at the beginning of each break period as noted above.

- An individual is not permitted to return to work if his/her temperature exceeds 100.6°F. Physiological monitoring data will be recorded on the Employee Physiological Monitoring Record for Heat Stress (Appendix D). Note: due to the lack of accuracy in measuring body temperatures, heart rate is probably a better measurement of heat stress and should be weighted accordingly.

4.6.1.8 Training

Personnel (including subcontractor employees) who may be exposed to hot working environments shall be trained on the following:

- Sources of heat stress, influence of protective clothing, and importance of acclimatization
- How the body handles heat
- Heat-related illnesses and their recognition (signs and symptoms)
- Preventive/corrective measures
- Individual factors, such as age, weight, gender, level of acclimatization, etc., that may predispose some workers to heat stress
- Medical conditions and use of prescription drugs, such as beta blockers, that may modify a worker's ability to adapt physiologically to heat stress
- Physiological monitoring, record keeping of oral temperature/pulse, and establishment of work-rest regimes
- First aid procedures

4.6.2 Poisonous Plants

Three or five leaves radiating from a stem identify poison ivy, poison oak, and poison sumac. Poison ivy is in the form of a vine (and sometimes low-lying) while oak and sumac are bush-like. All of these plants can produce a delayed allergic reaction. The plant tissues have an oleoresin, which is active in live, dead, and dried parts. The oleoresin may be carried through smoke, dust, contaminated articles, and the hair of animals. Additionally, when operating a chain saw to clear brush in the winter or early spring, saw dust may be contaminated with enough oleoresin to cause a severe rash. Symptoms usually occur 24 to 48 hours after exposure resulting in rashes that itch and blister. Should exposure to any of these plants occur, wash the affected area with a mild soap and water within one-half hour, but do not scrub the area. The best preventative

measure for poisonous plants is recognition and avoidance. The use of disposable gloves and Tyvek® coveralls can help prevent skin contact with these plants.

4.6.3 Flying Insects

Flying insects such as mosquitoes, wasps, hornets, and bees may be encountered while working at the site. Personnel who are allergic to bee stings shall notify the RM. Mosquito bites can be effectively prevented by the use of insect repellants containing N,N-Diethyl-m-toluamide (DEET). Treatment for insect bites and bee stings can be effected by the use of commercially prepared ointments.

4.6.3.1 West Nile Virus and West Nile Encephalitis

West Nile Virus/West Nile Encephalitis is rapidly becoming a significant health issue in the United States. West Nile Virus was first identified in the New York area in 1999, and is closely related to the St. Louis Encephalitis Virus, which is routinely found in the United States. Both of these viruses belong to the genus *Flavivirus* and causes diseases that are similar to one another. "Encephalitis" means an inflammation of the brain and it can be caused by viral and bacterial infections. West Nile Encephalitis can be a serious or even fatal illness.

4.6.3.2 Symptoms of Exposure

Most people who become infected with West Nile Virus will have either no symptoms or only mild ones, with higher susceptibility in those over 50 years old. Symptoms of West Nile Encephalitis include high fever, headache, confusion, muscle aches and weakness, seizures, or paralysis. At its most serious, the infection can result in coma, permanent neurological damage, and death. Symptoms usually occur 5 to 15 days following the bite of an infected mosquito. Because West Nile Encephalitis is a viral infection, antibiotics are not effective and there is no specific treatment available other than general support therapy.

4.6.3.3 Protective Measures at Projects

There is currently no vaccine to protect humans against West Nile Virus, although some drug companies are working on producing one. Individuals at project sites can reduce their risk from being infected with West Nile Virus by taking the following actions to protect against mosquito bites:

- Review the hazards of West Nile Virus periodically in morning safety meetings.
- Increase protective measures when working at dawn, dusk, and in the early evening.
- Reduce the area of exposed skin when working outdoors. Long-sleeved shirts with sleeves rolled down are recommended. Understand that mosquitoes may bite through thin clothing, so personnel should evaluate the actual Level D clothing worn, for example, heavy long sleeve work shirts and heavy dungarees/jeans may be indicated.

Activity at projects where disposable coveralls use (i.e., Tyvek®) is specified further reduces the risk of mosquito bites.

- For activities where only Level D PPE is specified, consider using disposable coveralls when working in wooded, highly vegetated, or swampy areas.
- Use an insect repellent containing approximately 30 percent DEET. N,N-diethyl-meta-toluamide in concentrations greater than 35 percent provides no additional protection. Use the repellent according to the manufacturer's directions provided on the container. Use just enough repellent to cover exposed skin and clothing. Do not treat unexposed skin. Frequent reapplication or saturation is unnecessary for effectiveness. Avoid prolonged and excessive use of DEET.
- When additional protection against mosquitoes is necessary, commercially prepared "clothing and gear" insect repellants containing 0.5 percent permethrin may be used. These repellants, such as Repel Permanone™ are available in the sporting goods departments at major retailers. Clothing and gear insect repellants are not for use on skin. Use the repellent according to the manufacturer's recommendations provided on the container.
- After returning from outdoor field activities, wash treated skin with soap and water.
- Personnel should report flu-like symptoms to the RM.

4.6.4 Spiders

Personnel shall be alert to the potential for spider bites. Spiders sometimes establish residence in dark places, stored clothing, and PPE. It is advisable for personnel to inspect clothing and PPE for spiders prior to donning. If a spider bite is sustained, personnel shall report it to the RM.

4.6.5 Sunburn

Personnel working in direct sunlight are encouraged to cover exposed skin and apply sunscreen to all unprotected skin surfaces. The benefits of preventing sunburn and skin cancer are self-evident. Sunscreen will be provided for use by project personnel while working on site.

5.0 Personal Protective Equipment

When engineering and administrative controls are not feasible or adequate to protect personnel from the hazards associated with project activities, PPE use will be required. This section describes the use, type, and levels of PPE that will be used for this project.

Initial levels and upgraded levels of PPE required for each activity are provided in Table 3, "Task Protection Levels." Adjustments to PPE selection will be made based:

- Upon actual conditions and task performed
- After review of the MSDS or recommendations by the chemical manufacturer
- After review of manufacturer's PPE selection guides
- With the concurrence of the OSC and RM

Downgrades in levels of PPE must approved by the HSE PROGRAM MANAGER.

5.1 Work Clothing

The acceptable work clothing for all employees working on project sites includes long pants, safety toed boots/shoes, and a long sleeve shirt. The following describes additional work clothing considerations that are required when performing project activities:

- Personnel working around ignition sources shall not wear highly flammable clothing, such as polyesters, double-knits, etc. Clothing made of 100% cotton is recommended and flame resistant clothing may be necessary under other conditions.
- Do not allow clothing to become contaminated with grease, oil, paint, thinners, solvents or similar materials – especially in areas exposed to heat or ignitions sources.
- Clothing that has become torn, ragged, or frayed is not acceptable.
- Workers should wear clothing that is reasonably snug and not wear rings, watches, necklaces, etc.—all of which may catch various surfaces and equipment.

5.2 Levels of Protection

The following is a description of the PPE that will be required during various phases of the project. U.S. Environmental Protection Agency terminology for levels of PPE is used: Levels A, B, C, and D.

5.2.1 Level A Personal Protective Equipment

Level A PPE use is not anticipated during this project.

5.2.2 Level B Personal Protective Equipment

Level B PPE use may be required during this project should entry into PRCSs become necessary. An addendum to this plan will be developed by the RM/SSHO and the Program HSE Manager, should that become necessary. Jim Our team subcontractor want to do the first activity in Level B due to odor. We need to write this now.

5.2.3 Level C Personal Protective Equipment

Level C PPE is an upgrade in protection from Level D-Modified PPE in that it mandates the use of air-purifying respiratory protection, due to the potential presence of unhealthful levels of airborne contaminants. Level C PPE is not anticipated to be necessary; however, will become necessary if action levels are exceeded or when deemed necessary by the SSHO. Integrated air monitoring will be conducted during intrusive site operations in certain areas to quantify airborne lead concentrations (Section 8.1.3).

Level C PPE, at a minimum, shall consist of all Level D-Modified PPE plus the following:

- Half-face or full-face air purifying respirator (APR) with high-efficiency particulate air (HEPA) equivalent cartridges of filter class N100, R100, or P100.

5.2.4 Level D-Modified Personal Protective Equipment

Level D-Modified PPE is required for various activities during this project. Level D-Modified PPE consists of the following:

- Work clothing as prescribed by weather
- Hard hats meeting ANSI/ISEA Z89.1 specifications (2009) (when working near overhead hazards, construction areas, or in posted areas).
- Safety glasses with side shields meeting American National Standards Institute (ANSI)/International Safety Equipment Association (ISEA) Z87.1 specifications (2010a).
- Safety-toed boots meeting ANSI/ISEA Z41.1 specifications (1999) or conforming to ASTM International F2412-11 and F2413-11.
- High-visibility work apparel meeting ANSI/ISEA 107-2010 specifications (2010b) (when working in the vicinity of moving vehicles or mobile equipment; or when performing other operations that require a high degree of visibility)
- Hearing protection (when operating noisy equipment or working in noisy areas)
- Work gloves, such as leather, cotton, or other material that provides cut/abrasion resistance (as necessary)

- Nitrile surgical gloves (inner when contact with contaminated media, contaminated items, or irritating plants is possible)
- Nitrile surgical gloves (outer when obtaining samples; when contact with contaminated media, contaminated item, or irritating plants is possible)
- Nitrile gloves – 15 mil (outer when some additional mechanical protection is necessary to prevent contact with contaminated soil or a contaminated item)
- Chemical resistant boot covers and/or outer boots (polyvinyl chloride/latex/neoprene)
- Kevlar® gloves when manually handing debris.
- Face shield (when grinding or chipping materials, pressure washing, weed trimming, or performing work where a splash hazard exists).
- Tyvek® coveralls with hoods, elastic wrists, and ankles (when contact with contaminated media, contaminated items, or irritating plants is possible).
- Vinyl raingear (when pressure washing or performing work where a splash hazard exists).
- Shin/metatarsal protection (when pressure washing).
- Kevlar® chainsaw chaps and mesh face shield (when operating chainsaw).
- Additional eye and face protection for hot work with welding or torching, such as face-shield, welder's helmet, tinted cutting goggles.
- Molten metal and slag protection (when welding/torching).
- Flame resistant Nomex coveralls (when welding/torching).
- Openings at ankles, wrists, and hoods shall be taped (if necessary).

Employees working in areas where electrical hazards are present shall be provided with, and shall use, protective equipment as required by Section 130.7 of National Fire Protection Association 70 E (NFPA, 2012) that is designed and constructed for the specific part of the body to be protected and for the work to be performed.

5.2.5 Level D Personal Protective Equipment

Level D protection is the minimum level of protection that will be used at the site. Level D PPE shall, at a minimum, consist of:

- Work clothing as prescribed by weather.
- Hard hats meeting ANSI/ISEA Z89.1 specifications (2009) (when working near overhead hazards, construction areas, or in posted areas).

- Safety glasses with side shields meeting American National Standards Institute (ANSI)/International Safety Equipment Association (ISEA) Z87.1 specifications (2010a).
- Safety-toed boots meeting ANSI/ISEA Z41.1 specifications (1999) or conforming to ASTM International F2412-11 and F2413-11.
- High-visibility work apparel meeting ANSI/ISEA 107-2010 specifications (2010b) (when working in the vicinity of moving vehicles or mobile equipment; or when performing other operations that require a high degree of visibility).
- Hearing protection (when operating noisy equipment or working in noisy areas).
- Work gloves, such as leather, cotton, or other material that provides cut/abrasion resistance.

5.2.6 Additional Requirements for Head, Hand, Foot, and Eye/Face Protection

There are PPE requirements that are in addition to the general PPE specified in Sections 5.2.4 and 5.2.5.

5.2.6.1 Head Protection

The following requirements pertaining to hard hats apply:

- All personnel are required to have their company logo and their name prominently displayed on their hard hat. The name shall be applied above the brim of the hat using block letters.
- Hard hats that have been altered by drilling or cutting will not be permitted.
- Stickers shall not be placed on the hard hat where they will interfere with the inspection of the top portion for defects. CB&I will permit the placing of stickers on the sides of a hard hat no higher than the CB&I logo.
- Welders are required to wear hard hats when in a hardhat area. Soft cap welding is not permitted.
- Operators of vehicles and equipment are required to wear hard hats during the operation of such equipment except in enclosed cabs.
- Hard hats are required in areas that typically would not require the use of a hard hat (offices, break areas, barracks, etc.) when the work activity creates an overhead hazard.
- The brim of the hard hat is designed to protect the face from falling objects and debris. The brim of the hard hat shall remain forward unless authorized by the manufacturer and approved by the SSHO and HSE PROGRAM MANAGER to be worn in a different orientation.

5.2.6.2 Hand Protection

The following requirements pertaining to work gloves apply:

- Workers shall wear appropriate work gloves during all work activities, unless the gloves would increase the hazard potential of the task. The SSHO shall select gloves that are properly suited to the type of work involved and work place hazards identified.
- When working with chemicals employees shall review the appropriate MSDS and implement the manufacturer recommended protective measures
- Cut resistant gloves or Kevlar® gloves shall be required when working around sharp edges or hot surfaces or when using tools such as utility/razor knives. Where indicated through the risk assessment, Kevlar® sleeves or gauntlets will also be used
- Employees shall be responsible for inspection of their gloves and notification of their supervisor when replacements are needed. The supervisor is responsible for immediately providing replacement gloves.
- Employees who are required to operate rotating machinery shall be aware of the hazards of rotating equipment while wearing gloves. Specific requirements will be addressed in the task specific JSA.
- Employees shall not perform work utilizing damaged or worn gloves. The SSHO will conduct "spot checks" to verify workers have undamaged gloves in good repair.

5.2.6.3 Foot Protection

The following requirements pertaining to foot protection apply:

- Work boots shall have uppers that cover the ankles.
- Safety toed tennis shoes are prohibited.
- Personnel who perform work within the confines of an office and will periodically leave their work area and conduct business where field activities are taking place shall wear work boots that meet the requirements of Sections 5.2.4 and 5.2.

5.2.6.4 Eye and Face Protection

The following requirements pertaining to eye and face protection apply:

- All personnel shall wear only company approved protective eyewear. Protective eyewear shall meet the minimum requirements of the current ANSI Z87.1, to include glasses (prescription and non-prescription), special purpose goggles, standard goggles, etc.
- Employees whose vision requires the use of corrective lenses in spectacles, shall be protected by goggles of one of the following types:

  - Spectacles whose protective lenses provide optical correction.
  - Goggles that can be worn over corrective spectacles without disturbing the adjustment of the spectacles.
  - Goggles that incorporate corrective lenses mounted behind protective lenses.
- Face and eye protection equipment shall be kept clean and in good repair. The use of face and eye equipment with structural or optical defects shall be prohibited.
- Eye protection is required in all designated work areas.
- Eye protection shall also be worn in office settings when the work conducted therein creates the potential for eye injuries.
- Employees requiring corrective lenses shall have safety glasses in which the frames and lenses meet ANSI specifications or they shall be required to wear protective eyewear over their corrective lenses.
- The addition of side shields to non-safety glasses shall not be permitted.
- Protective eyewear and full-face shields or welding hood (double eye protection) shall be worn when performing grinding, chipping, or similar activities. Other employees in the area (that is in any area in which grinding dust is falling/flying) shall be protected by screens or shall wear protective eyewear and face shields.

5.3 Respiratory Protection

Respiratory protection equipment shall be NIOSH-approved and respirator use will conform to American National Standards Institute Z88.2 and OSHA 29 CFR 1910.134 requirements. CMS-710-02-PR-03500, Respiratory Protection, details the medical qualification and training requirements, as well as the selection, use, inspection, cleaning, maintenance, storage, and fit testing of respiratory protection equipment. This procedure complies with the requirements contained within 29 CFR 1910.134.

All personnel (including visitors) using respiratory protection, shall possess a written opinion by the medical examiner of the person's ability to use the necessary respiratory protective equipment and shall have successfully passed a respirator fit test (Section 5.2.3) in accordance with CMS-710-02-PR-03500, Respiratory Protection, within the last 12 months. Fit testing and any training related to respiratory protection for site personnel will be documented on the Training Acknowledgment Form (Appendix D).

5.3.1 Respirator Cartridge Change-out Schedule

The cartridge change-out schedule is largely based on the increase of breathing resistance resulting from cartridge loading from dust. Workers will change the filter cartridges when

breathing resistance is noted or when workers notice any odor, irritation, or discomfort. Cartridges shall be changed at a minimum of once per day.

5.3.2 Respirator Inspection and Cleaning

Respirators shall be checked periodically by a qualified individual and inspected before each use by the wearer. All respirators and associated equipment will be decontaminated and hygienically cleaned after each use.

5.3.3 Respirator Fit Testing

Annual respirator fit tests are required of all personnel wearing negative-pressure respirators. The fit test must be for the style and size of the respirator to be used. Quantitative fit-testing is required for use of respirators in chemical environments where the respirator effective use limit exceeds 10 (exposure of 1 ppm inside the respirator for 10 ppm outside the respirator). Therefore, quantitative fit-testing is dependent on the PEL/TLV of the chemical substance involved. Quantitative fit-testing is required for potential exposure to airborne particulate levels that exceed 10 times the established PEL/TLV. Qualitative fit-testing will use isoamyl acetate or irritant smoke. This method may be utilized, but does not provide the same level of certainty as quantitative fit-testing.

5.3.4 Facial Hair

No personnel who have facial hair, which interferes with the respirator's sealing surface, will be permitted to wear a respirator and will not be permitted to work in areas requiring respirator use.

5.3.5 Corrective Lenses

Normal eyeglasses cannot be worn under full-face respirators because the temple bars interfere with the respirator's sealing surfaces. For workers requiring corrective lenses, special spectacles designed for use with respirators will be provided.

5.3.6 Medical Certification

Only workers who have been certified by a physician as being physically capable of respirator usage will be issued a respirator. Personnel unable to pass a respiratory fit test or without medical clearance for respirator use will not be permitted to enter or work in areas on site that require respiratory protection. Employees will receive a written physicians opinion that they are fit for general hazardous waste operations as per 29 CFR 1910.120(f)(7).

5.4 Donning/Doffing Personal Protective Equipment

All persons entering an Exclusion Zone shall be wearing the required PPE in accordance with the requirements of this SSHP. When leaving the Exclusion Zone, PPE will be removed in

accordance with the procedures listed in Section 7.1, in order to minimize the spread of contamination.

5.5 Fall Protection

CB&I has a fall protection policy with 100% tie-off, as outlined in CMS-710-02-PR-00900, Fall Protection. A Fall Protection Plan must be generated for each category of work activity. Fall protection, with 100% tie-off, is required for all work above 6 feet.

5.6 Activity-Specific Levels of Protection

The required level of personal protection is specific to the activity being conducted (Table 3) and shall be documented in the JSA.

Levels of PPE are subject to change or to modification. Upgrading of PPE may occur when action levels are exceeded, when time-integrated air-sampling results indicate exposures greater than one-half of the most restrictive exposure limits are occurring, or as specified by the OSC, SSHO, RM, or HSE PROGRAM MANAGER (Section 8.1.2). Levels of PPE shall not be downgraded without prior approval from the HSE PROGRAM MANAGER.

6.0 Site Control and Work Zones

The purpose of site control is to minimize chemical exposures to workers, protect the public from hazards due to site activities, and prevent vandalism. The work areas that pose chemical and physical hazards to personnel may be regarded as regulated or restricted. To prevent both exposures to unprotected personnel and migration of contamination due to tracking by personnel or equipment, work areas known to contain chemical contamination will be clearly identified.

CB&I Federal Services, LLC will designate work zones at the site as suggested in *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities* (NIOSH et al., 1985). Regulated work areas are divided into the following three zones:

- Exclusion Zone
- CRZ
- Support Zone

6.1 Exclusion Zone

The Exclusion Zone is, in general, the area where chemical, physical, or other hazards occur/exist during project work. All employees are required to follow the established procedures when working in these areas. Fencing, banner tape, signs, or other appropriate means will identify the location of the Exclusion Zone. An Exclusion Zone Entry Log (Appendix D) shall be kept daily, which records the time of entry and exit from the Exclusion Zone for each person. Unauthorized personnel shall not be allowed in the Exclusion Zone.

6.2 Contamination Reduction Zone

Personnel and equipment decontamination will be performed in the CRZ. All personnel and equipment entering or leaving the Exclusion Zone will pass through the CRZ in order to prevent cross contamination and for the purpose of accountability. Personal protective equipment will be removed in the CRZ, cleaned, and properly stored or disposed of. All water generated from equipment and personal decontamination will be contained on site and disposed of in an appropriate manner.

6.3 Support Zone

The Support Zone, or clean zone, will be the area outside the Exclusion Zone and CRZ and within the geographic perimeters of the site. The Support Zone is used for staging of materials, parking of vehicles, office facilities, sanitation facilities, and receipt of deliveries. Eating, drinking, and smoking will only be allowed in this area.

6.4 Emergency Entry and Exits

During an emergency, personnel will evacuate upwind at a safe distance, within sight of the emergency, at a pre-determined location. The secondary emergency rally point shall be designated upon initial mobilization. Additional emergency procedures can be found in Section 11.0.

6.5 Site Entry Requirements

In order to allow an individual into regulated areas of the site (i.e., Exclusion Zone and CRZ) he/she must meet the following requirements:

- Documentation of completing training requirements as described in Section 9.0 (including review of this SSHP and signing off as such)
- Documentation of completing medical surveillance requirements as described in Section 10.0
- Respiratory fit testing as necessary (Section 5.1)
- Attend the site orientation session
- Review the specific AHA
- Obtain authorization from RM (or designee)
- Don the appropriate PPE
- Sign the site entry log

6.6 Posting Site

Appropriate warning signs will be strategically placed where people enter the Exclusion Zone and CRZ. Signs should read "Danger - Authorized Personnel Only, Personal Protective Equipment Required Beyond This Point" or similar. Signs may be more hazard-specific as necessary. Additional warning signs, including lead warning signs, should be posted at the perimeter of the site and the perimeter of the exclusion zone.

7.0 Decontamination

Decontamination of equipment and personnel will be performed to limit the migration of contaminants off site and between work zones. Decontamination will generally occur at the edge of the Exclusion Zone. Additional, temporary decontamination stations may be established as project activities and needs warrant. This section describes the necessary procedures for personnel and equipment decontamination. In general, everything that enters the Exclusion Zone at the site shall either be decontaminated or properly discarded upon exit from the Exclusion Zone. All personnel shall enter and exit Exclusion Zones through a CRZ.

7.1 Personnel Decontamination

Personnel decontamination consists of discarding disposable PPE, cleaning reusable PPE, and washing the hands and face.

7.1.1 Decontamination Procedures for Level D-Modified Personal Protective Equipment

In general, the personnel decontamination procedure for activities conducted in Level D-Modified consists of personnel discarding disposable PPE, washing re-usable PPE, then washing hands and face.

7.1.2 Decontamination Procedures for Level C Personal Protective Equipment

The general decontamination sequence for activities conducted at Level C is as follows:

- Wash and rinse outer gloves and boots
- Remove and rinse hard hat
- Remove tape at wrist, boot, and hood interface
- Remove outer gloves and boot covers
- Remove APR, discard cartridges (if necessary), clean APR
- Remove coveralls
- Remove inner gloves
- Wash hands and face

Disposable gloves and coveralls will be removed by turning inside out. Ground cloths, gloves, boot covers, coveralls, and APR cartridges will be placed into plastic trash bags and stored at the CRZ for disposal. Respirators shall be cleaned with potable water in the field after each use and shall be washed at the end of the day using a soap and water wash followed by disinfecting. Respirators shall be inspected before each use for damage, missing parts, and proper function. Other reusable protective equipment worn by personnel performing field activities will be rinsed with potable water after each use and will be cleaned at the end of each day in the manner

described by the manufacturer. Reusable PPE items will be air-dried and properly stored. Air purifying respirators shall be thoroughly dried and placed in plastic bags for storage.

7.2 Suspected Contamination

Any employee suspected of experiencing skin contact with contaminated materials is to remove all clothing (as modesty permits and exposure warrants), thoroughly wash the affected area(s), and don clean clothes. Following this, he/she shall report to the RM.

7.3 Procedures for Equipment and Vehicle Decontamination

Equipment and vehicle decontamination procedures consist of cleaning with a low volume, high pressure (or steam) washer. Small equipment may be pressure washed or scrubbed/wiped with soap and water. All wash waters will be collected for treatment or disposal. All equipment requiring maintenance or repair will be decontaminated prior to servicing. Reusable sampling equipment and any other tools used for intrusive work will be decontaminated between sampling locations.

Equipment decontamination will be conducted at an established decontamination station. The procedure for decontaminating large equipment is:

- Scrape off excess solids (mud)
- High pressure wash all outside surfaces
- Sweep and wipe down interior surfaces (if applicable)

At the conclusion of work at the project, all equipment shall be thoroughly cleaned using the method previously described. The RM (or designee) will inspect all equipment leaving the site for adequacy of decontamination (visually clean unless otherwise specified).

7.4 Decontamination Equipment and Supplies

Decontamination equipment and supplies consist of, but are not limited to, the following:

- Potable water
- Washtubs
- Non-phosphate detergent, such as Alconox
- Brushes, hand sprayers
- Plastic sheeting
- 5-gallon buckets with lids
- Garbage bags
- 55-gallon drums or similar container for collection of decontamination fluids
- Labels or paint sticks for marking contents of containers

7.5 Procedures for Emergency Decontamination

In an emergency, the primary concern is to prevent the loss of life or personal injury. If immediate medical treatment is required to save a life, decontamination should be delayed until the victim is stabilized. Proceed with decontamination if it can be performed without interfering with essential life-saving techniques or first aid. If a worker has been exposed to corrosive materials, decontamination must be performed immediately. If an emergency due to a heat related illness develops, protective clothing should be removed from the victim as soon as possible to reduce further stress. During an emergency, provisions must be made for protecting rescue, first aid, or medical personnel from hazardous materials and for disposing contaminated clothing and equipment.

If decontamination can be done:

- Wash, rinse, and/or remove protective clothing and equipment.

  Note: In general, the concentrations of site contaminants present at the site do not necessitate a delay in obtaining medical attention due to decontamination requirements. In the event that corrosive materials, such as acid or caustic gets in the eyes, first aid personnel should begin to administer a 15 minute eye irrigation with water while EMS personnel are responding to the incident. Similarly, if an acid or caustic material is on an injured employee's skin, first aid personnel should flush the acid off of the skin in conjunction with other first aid procedures being administered. Emergency Medical Service personnel should always be summoned as quickly as possible so as not to delay professional medical treatment.

If decontamination cannot be done:

- Alert medical personnel to potential contamination and instruct them about specific decontamination procedures, if necessary.
- Provide site personnel familiar with the incident at the medical facility.

8.0 Environmental and Personnel Monitoring Program

The SSHO, or designee, will conduct air monitoring, personal air sampling, and noise dosimetry as necessary, to measure the concentrations of dust, oxygen, flammable/combustible vapors, carbon monoxide, metallic lead, and noise. Monitoring data is primarily used to verify that administrative controls, engineering controls, and PPE are effectively preventing harmful exposures to project personnel. Monitoring data is also useful for the documentation of potential fugitive emissions and indicates when site activities or work practices need modification; however, perimeter monitoring will be performed by Superfund Technical Assessment and Response Team (START), as directed by the OSC. Meteorological data shall be obtained as necessary for determining if physiological monitoring should be activated or as an adjunct in determining site layout and perimeter monitoring. The results of monitoring shall be conveyed to project personnel.

8.1 Types of Monitoring

Various types of monitoring will be performed at the site. The following monitoring will be performed as necessary:

- Real-time air monitoring
- Time-integrated personal air sampling
- Noise surveys/noise dosimetry

8.1.1 Real-Time Air Monitoring

Real-time air monitoring will be conducted during contaminated soil excavation and soil/debris load out. While not anticipated, real-time air monitoring will also be performed in special circumstances such as confined space entry, hot work permitting, or during spill clean-up. The real-time instrumentation that may be used is listed as follows:

- Oxygen meter to measure for oxygen deficient/enriched atmospheres
- Combustible gas indicator for flammable/combustible atmospheres
- Carbon monoxide when internal combustion engines are operated in areas with limited or poor ventilation

Refer to Table 4, "Direct Reading Air Monitoring Requirements," for additional information.

8.1.1.1 Combustible Gas Indicator/Oxygen Meter/Carbon Monoxide Meter

An MSA Model FiveStar, or equivalent, shall be used to determine the concentration of flammable gases, oxygen, and carbon monoxide when necessary.

8.1.1.2 Combustible Gas Indicator/Oxygen Meter/Carbon Monoxide Meter Action Levels

The following action levels are established for Combustible Gas Indicator/Oxygen Meter/Carbon Monoxide Meter air monitoring data:

- Oxygen: less than 20 percent as a confirmed instantaneous reading.
- Oxygen: greater than 22 percent as a confirmed instantaneous reading.
- Combustible gas: greater than 10 percent of LEL as a confirmed instantaneous reading.
- Carbon monoxide (work area): greater than 25 ppm as a confirmed instantaneous reading.

Unexpected instrument readings at or above action levels generally warrant the following:

- All personnel will stop work in the area, exit the work area, and assemble upwind.
- Additional monitoring shall be performed to substantiate previous readings.

If previous readings are substantiated, engineering controls such as increased ventilation shall be implemented to maintain air quality within specified levels or personnel shall upgrade to the appropriate level of protection. If engineering controls, such as increased ventilation, cannot maintain atmospheres to within acceptable qualities, then the HSE PROGRAM MANAGER shall be contacted prior to continuing work activities.

Refer to Table 4 for additional information.

Jim we need to add some information on benzene.

8.1.2 Noise Surveys/Noise Dosimetry

Noise surveys shall be conducted with a Sound Level Meter when it is suspected that equipment is producing noise at sound pressure levels greater than 80 decibel. Areas that are surveyed at sound pressure levels greater than 85 decibel shall be posted as a noise hazard area. Actual employee exposures shall be determined with a noise dosimeter. The equipment/area shall then be evaluated to determine if it is feasible to implement engineering controls. Engineering controls shall be implemented when feasible.

8.2 Calibration, Handling, and Maintenance

All air monitoring equipment will be maintained and calibrated by the SSHO, or designee, according to the manufacturer's recommendations. Care shall be given by the operator to the handling of instruments so that the accuracy and fitness for use are maintained. Air sampling pumps shall be calibrated with primary standards. Calibration checks on real-time monitoring

instruments shall be performed using standards, which are National Institute of Standards and Testing traceable. Calibration for all instruments, except aerosol monitors, will be performed and documented before and after use each day. Only properly functioning instrumentation shall be used. All instruments are to be returned for maintenance on a schedule that does not exceed 12 months.

8.3 Record Keeping

The RM, or designee, will be responsible for maintaining all air monitoring records. The following records shall be maintained:

- Date, time, location, and operations performed
- Meteorological data
- Equipment identification, calibration data
- Monitoring/sampling data
- Engineering controls used to reduce exposure
- Description of PPE worn

8.4 Quality Assurance/Quality Control

The major concerns of a quality assurance/quality control are calibration of equipment and document control. Air monitoring instruments shall be properly maintained and calibrated before and after use. The calibration and field maintenance of air monitoring instruments shall be performed by the SSHO, or designee, against known standards and manufacturer specifications. Instruments shall be calibrated to plus or minus 5 percent against known standards. If instruments cannot be calibrated within this tolerance or if operation becomes erratic, then the instruments shall not be used and sent out for maintenance.

The following air monitoring data and calibration records (Appendix D) shall be maintained, controlled, and retrievable at all times by the SSHO, or designee:

- Ambient Air Temperature/Wind Speed Log
- Air Monitoring Data Record
- Air Sampling Data Record
- Employee Notification of Industrial Hygiene Monitoring Results

These records shall be temporarily maintained in the field office files by the RM, or designee, and then stored in the permanent project files. The records will be forwarded to CB&I or subcontractor Human Resources Department (or equivalent safety records personnel) for inclusion in personnel files when appropriate.

9.0 Training Requirements

This section describes general training, hazardous waste operations training, safety meetings, site-specific training, hazard communication, first aid and CPR, and other additional training, certification, and licenses needed to work on the site.

9.1 General Training

The RM, or designee, is responsible for informing all site personnel and all visitors of the contents of this SSHP and ensuring that each person signs the SSHP and Training Acknowledgment Forms prior to working on the site. Documentation of certification of training requirements will be reviewed by the RM or designee, filed on site, and submitted to the USEPA (if requested).

9.2 Hazardous Waste Operations Training

All site personnel working in regulated areas at this project will meet the minimum training requirements as specified in 29 CFR 1926.65 and 29 CFR 1910.120. The following criteria are used to determine the level of training required:

- Personnel engaged in hazardous substance removal or other activities, which expose or potentially expose them to hazardous substances and health hazards shall receive a minimum of 40 hours of instruction off site, and 3 days of supervised field experience.
- Personnel who perform limited activities at the site and are not potentially exposed to contaminant levels above the PEL shall receive a minimum of 24 hours of instruction off site, and 1 day of supervised field experience.

9.2.1 40-Hour Training

The following is a general list of topics covered in the 40-hour course:

- General site safety
- Chemical, physical, and environmental hazards
- Key management positions responsible for site safety and health
- Safety, health, and other hazards (including noise)
- PPE
- Work practices by which employees can minimize risks from hazards
- Safe use of engineering controls and equipment on site

- Medical surveillance requirements including recognition of signs and symptoms of exposure
- Hazard communication (Worker Right-to-Know)
- Engineering controls and safe work practices
- Components of the site safety and health program
- Decontamination practices for personnel and equipment
- Confined space entry procedures
- Emergency response procedures

9.2.2 24-Hour Training

The same topics presented in the 40-hour course are reviewed in the 24-hour course but with less time and detail spent on each topic.

9.2.3 Supervisory Training

The RM will receive eight additional hours of specialized training. The following topics are discussed:

- Overall safety and health program
- PPE program
- Spill containment program
- Health hazard monitoring procedures and techniques

9.2.4 Refresher Training

Personnel covered by Sections 9.2.1 and 9.2.2 are required to complete 8 hours of refresher training annually on the following topics:

- Safe work practices
- Chemical hazard awareness
- Hearing conservation
- Hazard communication
- Respirator refresher
- Confined space entry refresher

9.2.5 Supervised Field Experience

Personnel covered by Section 9.2.1 will receive a minimum of 3 days actual field experience under the direct supervision of a trained, experienced supervisor. A minimum of 1 day is required for personnel who fall under the requirements of Section 9.2.2.

9.2.6 Visitor Training

Site access by persons making deliveries, public or government officials, or visitors will be limited to support areas only. These persons will not be required to comply with the medical and training requirements as previously defined. Support Zone access will be limited to designated work, delivery, or observation areas to minimize any potential exposure to site contaminants. Site observation areas will be located upwind from the Exclusion Zone. Weather conditions or other site activities may restrict access to these areas. Authorization for limited site access will be determined on a case-by-case basis by the RM (or designee) in consultation with the OSC. These personnel will be escorted on site and will be strictly prohibited from entering the Exclusion Zone or CRZ, unless all entry requirements are satisfied.

9.3 Safety Meetings

Employees shall be provided continuing safety and health training to enable them to perform their work in a safe manner.

9.3.1 Morning Safety Meetings

The RM, or designee, shall conduct a safety meeting at the beginning of each shift. The topics discussed at this daily "tailgate" safety meeting shall include safety and health considerations for the day's activities, pertinent aspects of AHAs, necessary PPE, problems encountered, and new operations. Attendance records and meeting notes shall be documented on the Safety Meeting Log (Appendix D) and are maintained with the project files. At the conclusion of each shift, a debriefing for site employees will be held, if necessary.

9.4 Site-Specific Training

All personnel, including subcontractors, working at the site and falling within the scope and application of 29 CFR 1926.65 and 29 CFR 1910.120 shall attend a site-specific orientation covering the following topics:

- Purpose and review of this SSHP including emergency response procedures as outlined in Section 11.0
- Review of applicable AHAs
- Names of personnel responsible for site safety
- Review of CB&I's I CARE Program
- The provisions for medical care and facilities and the names of CPR and first aid trained personnel assigned to the project
- Morning safety meeting procedures
- Safety and health hazards on site and the means to control/eliminate those hazards

- Responsibilities for accident prevention and maintaining safe and healthful work environments
- Procedures for reporting and correcting unsafe conditions or practices
- Responsibilities for reporting all accidents and illnesses
- PPE (use and care)
- Location of safety equipment (i.e., fire extinguishers, first aid kits, eyewash stations, etc.)
- Standard operating procedures, safety rules, and safe work practices for the project
- Work zones and site control measures
- Hazard Communication Program (includes discussion of MSDSs on site)
- Confined space entry procedures (when applicable)
- Hot work procedures (when applicable)
- Lockout/tagout procedures
- Fall protection
- Fire prevention
- Housekeeping

The content of the training will be derived from information contained within this SSHP.

9.5 Hazard Communication

All personnel performing field activities will receive basic hazard communication training, which involves a review of the CB&I written hazard communication program, MSDSs (SDS), container labeling, and chemical health hazards. Personnel shall be trained on the hazards of chemicals on site by reviewing Section 4.1 and the MSDSs. Material Safety Data Sheets for additional materials brought on site will be reviewed with personnel prior to the use.

9.6 First Aid and Cardiopulmonary Resuscitation

There shall be a minimum of one person trained and certified in both first aid techniques and CPR on site. These employees will meet both the training and vaccination requirement of CMS-710-01-PR-00300, Bloodborne Pathogens.

9.7 Additional Training, Certification, and Licenses

In addition to the training, certification, and licensing previously detailed, the following shall also be required:

- All personnel operating motor vehicles shall hold a valid operator's license from the state in which they reside. License renewal is subject to individual state laws.
- Personnel operating powered industrial trucks (forklifts) shall have a certificate designating them as a qualified operator. Qualification is to be renewed every year.
- Any employee operating a powder actuated tool shall be qualified as an operator of that tool as specified by the manufacturer. Recertification, if any, shall be obtained as specified by the manufacturer.
- Confined space entry, attendant, and supervisory personnel shall be trained as previously specified. Confined space rescue personnel shall be trained and certified as specified in 29 CFR 1910.146 and shall practice rescues (from similar types of confined spaces) on an annual basis.
- The certification and recertification requirements for first aid (3 years) and CPR (1 year) are applicable. First aid and CPR training/certification must be made by a reputable provider, such as the American Red Cross or American Heart Association.
- Personnel wearing respiratory protection shall receive training in the use, care, and maintenance of that equipment on an annual basis. Fit testing for that equipment shall be performed on an annual basis as specified in 29 CFR 1910.134.
- Personnel working from ladders shall be initially trained as specified in CMS-710-02-PR-00500, Ladders..
- Personnel inspecting excavations shall have a certificate designating them as a competent person.
- Personnel supervising scaffold erection shall have a certificate designating them as a competent person.
- Personnel operating arc-welding equipment shall have a certificate designating them as a qualified operator.
- Personnel operating gas welding and cutting equipment shall have a certificate designating them as a qualified operator.
- Personnel may only use portable fire extinguishers to extinguish small fires, if the employee has been trained and the employee is confident that the small fire can be safely extinguished.

10.0 Medical Surveillance

CB&I Federal Services, LLC will utilize the services of an occupational medicine physician for the medical surveillance requirements of this project. Dr. William Nassetta (below) reviews all CB&I medical examinations and is available for medical consultation on an "as needed" basis.

Dr. William Nassetta, MD, MPH
CORE Health Networks
10059 N. Reiger Road
Baton Rouge, Louisiana 70809
877-347-7429
225-614-9561 (office)
225-292-8986 (fax)

Subcontractors shall also utilize the services of an occupational medicine physician of their choice to meet the medical surveillance requirements of this project.

10.1 Medical Examination

As required by CB&I Federal Services, LLC and OSHA, all personnel on site with the potential for exposure to contamination will have successfully completed a pre-placement or periodic/updated physical examination.

10.1.1 Pre-placement Examination

All personnel on site with the potential for exposure to contamination shall undergo a pre-placement examination that complies with 29 CFR 1926.65 and 29 CFR 1910.120 requirements for hazardous waste site operations.

Pre-placement medical examinations consist of:

- Medical and occupational history questionnaire, which includes information on past gastrointestinal (GI), hematological, renal, cardiovascular, reproductive, immunological, and neurological problems;
- Physical examination;
- Chest X-ray;
- Blood pressure;
- Complete blood count and differential to include hemoglobin and hematocrit determinations, red cell indices, and smear of peripheral morphology;
- Blood urea nitrogen and serum creatinine;

- Sequential Multiple Analyzer Computer Profile;
- Pulmonary function test;
- Audiogram;
- Electrocardiogram for employees over 35 years old or when other complications indicate the necessity;
- Stress test (as directed by the occupational physician based on electrocardiogram/ pulmonary function testing); and
- Visual acuity.

The following information shall be provided to the occupational physician:

- Copy of 29 CFR 1926.65 and 29 CFR 1910.120
- Description of employee's duties
- Site contaminant information
- Description of the PPE to be used and employee anticipated or measured exposure
- Information from previous medical exams
- Copy of Section 5.0 of the Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (NIOSH et al., 1985)
- Information required by 29 CFR 1910.134

The medical surveillance provided to the employee includes a written opinion by the medical examiner of the employee's ability to use the necessary respiratory protective equipment. Any employee found to have a medical condition, which could directly or indirectly be aggravated by exposure to any chemical substance present at the site, or by the use of respiratory equipment will not be employed for the project. A copy of the medical examination shall be provided at the employee's request.

The employee will be informed of any medical conditions that would result in work restriction or that would prevent them from working at hazardous waste sites.

10.1.2 Annual Exam

Site personnel shall receive an annual, update exam meeting the requirements of 29 CFR 1926.65 and 29 CFR 1910.120. The results of these exams are compared to previous results and the baseline physical to determine if any medical effects due to exposure have occurred. Appropriate actions shall be taken as recommended by the physician should the results indicate an exposure; otherwise, employees are cleared for continued work.

10.1.3 Exit Exam

CB&I offers exit physical exams (optional) for all employees involved in the medical surveillance program who are leaving the company for any reason.

10.1.4 Other Exams

Periodically, the need arises to conduct medical examinations at times other than those previously discussed. These include reassignment in accordance with 29 CFR 1910.120 (f)(3)(i)(C) and 29 CFR 1926.65 (f)(3)(i)(C), if an employee develops signs or symptoms of illness relating to work place exposure, if the physician determines examinations need to be conducted more often than once a year, and whenever an employee sustains a lost time injury or develops a lost time illness.

10.1.4.1 Site-Specific Medical Monitoring

Site employees participating in the medical surveillance program per 29 CFR 1926.65(f) may also undergo biological monitoring for this project. The biological monitoring will be performed on personnel prior to commencing project activities and immediately at the conclusion of project activities.

10.2 Subcontractor Requirements

Subcontractors shall certify that their employees have successfully completed a physical examination by a qualified physician on the Training Acknowledgment Form (Appendix D). The physical examinations shall meet the requirements of 29 CFR 1926.65 and 29 CFR 1926.103.

10.3 Medical Records

Medical and personal exposure monitoring records will be maintained according to the requirements of 29 CFR 1926.65 and 29 CFR 1910.120 and will be kept for a minimum of 30 years. The confidentiality of employee medical records shall be maintained. The written medical opinion from the occupational physician is kept in site files.

10.4 Medical Restrictions

When a medical care provider identifies a need to restrict work activity, the employee's home office will communicate the restriction to the RM. The terms of the restriction will be discussed with the employee. Every attempt will be made to keep the employee working, while not violating the terms of the medical restriction.

10.5 Drug and Alcohol Testing

CB&I Federal Services, LLC. is firmly committed to providing employees a safe and healthful workplace, and to providing clients and the public safe and efficient services. Employee

involvement with the use, possession, or sale of alcohol, illegal drugs, or any substance represented as a controlled substance creates an impediment toward meeting these commitments and is prohibited.

At no time while on duty may employees use or be under the influence of alcohol, narcotics, intoxicants, or similar mind-altering substances. Employees found under the influence of or consuming such substances will be immediately removed from the job site.

All employees of CB&I and its subcontractors are subject to drug and alcohol testing as described in CMS-710-01-PR-03600, Substance Abuse Program.

11.0 Emergency Response Plan and Contingency Procedures

An emergency is defined as a sudden, generally unexpected occurrence demanding immediate action. Emergencies at the site include accidents, injuries requiring medical care, fires, explosions, spills and significant releases of hazardous substances to the environment, and extreme weather events, such as tornadoes.

In the event that an emergency arises, the appropriate immediate response must be taken by the first person to recognize the situation. The field crew shall immediately notify the site management of the incident, and the appropriate emergency service organization shall be contacted. A list of emergency contacts is provided in Table 5, "Emergency Telephone Numbers." A copy of the emergency telephone numbers and directions to the nearest selected urgent care facility (EMS shall transport seriously injured personnel to the hospital) will be posted at the office.

The OSC, RM, and the HSE PROGRAM MANAGER, shall be notified of any accident, injury, or illness.

In the case of injury or illness, a trained person will render the proper emergency first aid care. First aid equipment and an emergency, eyewash shall be available at the area of fieldwork. Personnel will be notified as to the locations of first aid equipment during the initial safety briefing session.

If the injury or illness is from exposure to a hazardous substance, rapid identification of that substance should be attempted. This information shall be provided to the medical personnel. Material Safety Data Sheets or Safety Data Sheets (SDS) are provided for operational chemicals. The MSDS details first aid procedures to follow in the event an exposure occurs.

Unless the emergency event is extreme and obvious, the decision to cease all field activities and evacuate the site will be made by the OSC or RM. Field personnel will report to the office to sign-out, if possible. Local authorities (i.e., sheriff, fire department, and police) will decide if the emergency requires evacuation of the surrounding community. Responsibility for community evacuations will be with the local authority in charge of the emergency.

11.1 Personnel Roles/Lines of Authority

The roles and responsibilities of CB&I personnel for response to emergencies at the site will be clearly defined and coordinated with CB&I, subcontractors, USEPA, and emergency service personnel. The responsibilities of specific project individuals and the coordination of emergency service personnel are defined in the following subsections.

11.1.1 Response Manager

At all times during scheduled work activities, a RM (or designee) will be present on site. This individual will be responsible for implementing these procedures and determining appropriate response actions. Specific responsibilities for the RM (or designee) include:

- Evaluating and assessing emergency incidents or situations
- Assigning personnel and coordinating response activities on site
- Informing field personnel of the potential hazards associated with the site
- Summoning emergency response personnel
- Notifying the OSC and HSE PROGRAM MANAGER of an emergency
- Coordinating response to an incident with the USEPA
- Verifying that all emergency equipment is routinely inspected and functional
- Correcting any work practices or conditions that may result in injury to personnel or exposure to hazardous substances
- Informing the appropriate emergency response agencies of the provisions made herein
- Evaluating the safety of site personnel in the event of an emergency and providing evacuation coordination if necessary
- Maintaining site facilities and assisting site personnel in accessing those facilities

The RM (or designee) will direct all emergency response activities conducted or managed by CB&I.

11.2 List of Emergency Contacts and Notification

The Houston Fire Department shall be contacted prior to initiating site activities. They shall be advised and notified about upcoming site activities and potential emergencies. This shall be done to ascertain response capabilities and to obtain a response commitment.

The RM will be notified immediately in the event of an emergency. The RM will immediately evaluate the incident and, if necessary, notify emergency response personnel. If not previously notified, the OSC will be advised of the situation. Telephone numbers for emergency contact personnel are listed in Table 5. The list will be maintained with current contacts and telephone numbers, and will be posted at all CB&I-controlled telephones and in all CB&I vehicles.

The information provided to the emergency contact should include the nature of the incident and the exact location. Specifically, the information should include the following:

- Name and telephone number of the individual reporting the incident
- Location and type of incident
- Nature of the incident (i.e., fire, explosion, spill, or release) and substances involved (if any)
- Number and nature of medical injuries
- Potential for additional risks or dangers
- Potential off-site risks or dangers
- Movement or direction of spill/vapor/smoke
- Response actions currently in progress
- Estimate of quantity of any released materials
- Status of incident
- Other pertinent information

11.3 Medical Emergency Response

Minor injuries will be treated on site by qualified First Aid/CPR providers. Injuries and illnesses that do not require immediate medical care shall be treated at the selected medical care facilities. The EMS shall be summoned in the event of moderate to severe physical injury, which requires immediate emergency care. Figure 2, "Hospital Route Map." In all cases, the RM, or approved designee, shall accompany the injured worker to the appropriate medical care facility. Figure 3, "Core Health Networks Medical Facility Route Map," contains a map from the site to the Core Health Networks medical clinic, if it is necessary to assist in transporting personnel with minor injuries or illnesses.

The route to the hospital and the selected urgent care facility shall be posted in the office.

11.4 Personal Exposure or Injury

The following procedures will be implemented in the event of a personal injury (other than first aid only).

11.4.1 Serious Exposures or Injuries Requiring Transport by Ambulance

The RM (or designee) will provide support to emergency responders and dedicate appropriate project resources to the response effort.

Upon the realization that an individual(s) needs medical care with transport by ambulance, the following procedure will be used when applicable:

- Administer first aid and contact the RM to arrange for dispatch of the EMS.
- When the situation has been stabilized, decontaminate the injured person (if necessary; however, there are probably no situations at the site where it would be critical to decontaminate personnel prior to the administration of medical treatment). Do not perform decontamination if it interferes with emergency treatment, such as in a life threatening situation.
- Notify the HSE PROGRAM MANAGER.
- Move the person to the support area if there is no risk of further injury.
- Provide an individual to meet the EMS at the project entrance, to minimize time in locating the injured worker(s).
- Wait for emergency care, document the event, and maintain radio contact with the RM.
- The RM shall determine where the injured person is being transported and will then go to that medical facility. If the RM is unable to travel to the medical facility, then the HSE PROGRAM MANAGER must be contacted to gain approval for allowing alternate personnel to go the medical facility.

In the event of a chemical exposure, the following procedures shall be followed after summoning the EMS:

- Skin Contact:
  - Changes in complexion and skin color.
  - Changes in coordination.
  - Flush with water.
  - Remove clothing, flush skin.
  - Obtain prompt medical attention, as necessary
- Inhalation:
  - Remove the person from the area.
  - Administer first aid/CPR, as needed.
  - Obtain immediate medical attention.
- Ingestion:
  - Contact the Poison Control Center for immediate treatment, and then obtain immediate medical attention.

  - Inducing vomiting may cause further injury to the victim; follow instructions from the MSDS (SDS) and/or Poison Control Center Changes in demeanor.

- Eye contact:
  - Flush eyes immediately with water for a minimum of 15 minutes.
  - Obtain immediate medical attention.

11.4.2 Serious Exposures or Injuries Requiring Off-Site Medical Care

The RM will provide the necessary support and dedicate appropriate project resources to the response effort.

Upon the realization that an individual(s) needs medical care, but not requiring transport by ambulance, the following procedure will be used:

- Administer first aid and contact the RM to arrange for transport to medical facility by on-site vehicle.
- Notify the HSE PROGRAM MANAGER.
- When the situation has been stabilized, decontaminate the injured person.
- Move the person to the support area.
- The RM, or approved designee, shall transport the injured person to the Core Health Networks medical facility.

In the event of a chemical exposure, the following procedures shall be followed:

- Skin Contact:
  - Changes in complexion and skin color.
  - Changes in coordination.
  - Flush with water.
  - Remove clothing, flush skin.
  - Obtain prompt medical attention, as necessary

- Inhalation:
  - Remove the person from the area.
  - Administer first aid/CPR, as needed.
  - Obtain immediate medical attention.

- Ingestion:

  - Contact the Poison Control Center for immediate treatment, and then obtain immediate medical attention.
  - Inducing vomiting may cause further injury to the victim; follow instructions from the MSDS (SDS) and/or Poison Control Center Changes in demeanor.

- Eye contact:
  - Flush eyes immediately with water for a minimum of 15 minutes.
  - Obtain immediate medical attention.

11.5 Fire Control

A 2-A:10-B:C fire extinguisher will be kept at the field office and each work site, at a minimum. A 5-B:C fire extinguisher shall be mounted on all heavy machinery and vehicles. In the event of a fire or explosion at the site, the following actions shall be implemented:

- Evacuate all personnel to a safe location upwind or crosswind of the incident. Contact the RM.
- Concurrently with the above, contact the local fire department, as appropriate.
- If personnel are present who have had training in the use of fire extinguishers, use available fire extinguishers to extinguish small fires, if the fire can be safely extinguished. Personnel routinely working at the site should be trained in the use of fire extinguishers.
- Alert the local hospital of the possibility of fire victims, as appropriate.
- Document the incident in the field logbook and follow the procedures for incident reporting in Section 13.3.

11.6 Spill Prevention and Control

This spill prevention and control section sets forth the procedures for the coordination of and response to potential spills/discharges of fuels. The responsibilities of site personnel during spills/discharges have been outlined in Section 11.1.

11.6.1 Preemptive Measures

The following measures shall be taken to minimize the possibility of spills/discharges:

- Site controls are to be maintained so that only authorized personnel have access to work areas.
- Site personnel will be advised of appropriate spill/discharge control measures.
- Appropriate secondary containment structures will be used for storage and transfer of liquid hazardous materials and wastes on site.

11.6.2 Spill Response

If a hazardous material release is observed at the site, the RM will be immediately notified. An assessment will be made of the magnitude and potential impact of the release. If it is safe to do so, site personnel will attempt to locate the source of the release, prevent further release, and contain the spilled and/or affected materials as follows:

- The spill or release area will be approached from upwind.
- Hazards will be identified based on available information from MSDSs. The potential hazards will be evaluated to determine the proper personal protection levels, methods, and equipment necessary for response.
- If necessary, the release area will be evacuated, isolated, and secured.
- Work zones, including a CRZ, shall be set up.
- If possible, spill containment will initially be made without entering the immediate hazard area.
- Entry to the release area will be made by personnel with the PPE, training, methods, and equipment necessary to perform the work. Hazardous spill containment and collection will be performed as follows:
  - Contain the spill with absorbent socks, booms, granules, or construction of temporary dikes.
  - Control the spill at the source by plugging leaks, up righting containers, over packing containers, or transferring contents of a leaking container.
  - Collect the spilled material with shovels, pumps, or construction equipment as necessary.
- Store the spilled material for further treatment or disposal.
- The decontamination procedures established in Section 7.0 shall be used after the response is complete.

If site personnel cannot safely respond to an environmental release, evacuation of the area may be warranted. The OSC will be notified in the event of a spill. Upon the arrival of any emergency responders at the site, the RM will brief them on the incident status and provide details on any hazards present.

11.7 Site Evacuation Procedures

In the event that site evacuation is required, a continuous, uninterrupted air horn will be sounded. Air horns will be located in the office, each active work area, and on all construction equipment. Radio or cellular telephone communication may also be used to alert site workers and provide special instructions.

Personnel working in the Exclusion Zone or CRZ will immediately make their way to the adjacent Support Zone for a "head count." Depending on the severity of the event and allowable time, personnel exiting the Exclusion Zone and CRZ may be instructed to forgo or modify decontamination procedures. If the office is inaccessible, personnel shall evacuate to a safe upwind location and perform a "head count."

Personnel in the Support Zone will then report to the office for a "head count" and further instructions.

Situations requiring evacuation may include unusually severe weather conditions, fires, or significant chemical spills or releases. In the event of project evacuation, other than weather related, the OSC and the local fire department will be notified immediately. A site emergency map that delineates evacuation routes, emergency air horn locations, first aid kit locations, rally point, and Exclusion Zone perimeters will be provided once the RM has evaluated the site. Exact locations of emergency equipment may be modified by the RM. In the event changes are made, the site emergency map will be updated by the RM, or designee, and project personnel will be notified of changes.

11.8 Emergency Decontamination Procedures

Refer to Section 7.5 for information on procedures for emergency decontamination.

11.9 Adverse Weather Conditions/Natural Disasters

Personnel should be aware of the possibility for the occurrence of severe weather such as a tornadoes, thunderstorms, hail, hurricanes, or high wind. Necessary precautions or response, directed by the RM, will be taken in the event of severe weather. Local weather broadcasts will be monitored by the RM, or designee, when the likelihood for severe weather exists. Generally, voice communication will be utilized to alert crews to threatening weather. For most types of severe weather, personnel shall take refuge in vehicles or inside the office. In the event of a tornado, personnel should take cover in a basement, ditch, culvert, or interior room of a strong building. Personnel should be aware that ditches and culverts may fill up with water quickly and should only use these as shelters as a last resort. Personnel should be advised to leave the project site and take refuge at home or a motel when winter storms are predicted and imminent. Additional information shall be developed and communicated to personnel before commencing new tasks or activities.

11.10 Emergency Equipment

At a minimum, the following emergency equipment shall be maintained at the site:

- Fire extinguishers
- First aid kits

- Blood-borne pathogen control supplies or kit
- Emergency eyewash
- Communication devices

This equipment is to be inspected by the RM, or designee, on a weekly basis to verify that they are in good condition, ready to use, and easily accessible. Note: a seal may be maintained on first aid kits to indicate if the kit has been accessed within the preceding week. The weekly inspection of the first aid kit will only be necessary if the seal has been broken.

11.11 Critique and Follow-up of Emergency Procedures

The OSC shall be verbally notified immediately and receive a written notification within 24 hours of all accidents or incidents including releases of toxic chemicals, fires, or explosions. The report shall include the following items:

- Name, organization, telephone number, and location of the contractor
- Name and title of the person(s) reporting
- Date and time of accident/incident
- Location of accident/incident (i.e., site location and facility name)
- Brief summary of accident/incident including pertinent details, such as, type of operation ongoing at time of accident
- Cause of accident/incident, if known
- Casualties (i.e., fatalities and disabling injuries)
- Details of any existing chemical hazard or contamination
- Estimated property damage, if applicable
- Nature of damage, effect on contract schedule
- Action taken by CB&I to maximize safety and security
- Other damage or injuries sustained (public or private)

The RM will investigate the cause of the incident to prevent its reoccurrence. The investigation should begin as soon as practical after the incident is under control but no later than the first workday after the incident. Investigations will follow the procedures described below:

- Interview witnesses and participants as soon as possible or practical
- Determine the chronological sequence of events (opinions as to cause should not be solicited at this time)

- Note the location, movement, displacement, liquid levels, sounds, noises, or other sensory perceptions experienced by the participants or witnesses
- Obtain weather data
- Ascertain the location and position of all switches, controls, etc.
- Verify the condition of all safeguards
- Determine if a revision to emergency procedures is warranted

After the facts have been collected, causal factors should be identified and controlled/eliminated.

11.12 Hospital Information

The local hospital in Houston, TX is:

Memorial Hermann Hospital – Texas Medical Center - ER
6411 Fannin Street
Houston, TX 77030
Phone: 713-704-4000

The route to the hospital is depicted on Figure 2.

11.13 Medical Services Clinic Information

The CORE Health Networks clinic for the project is:

Concentra Medical Center
8799 N Loop Frwy
Houston, TX 77029
Phone: 713-674-1114
Fax: 713-674-5169
Hours of operation: M - F, 8:00 am - 5:00 pm

The route to the clinic is depicted on Figure 3.

12.0 Blood-Borne Pathogen Exposure Control Plan

Blood-borne pathogens are microorganisms (i.e., bacteria, virus) sometimes present in blood and certain body fluids, which are capable of causing human disease or death. These pathogens can also be present on objects and surfaces that have had contact with infected blood or certain body fluids. Blood-borne pathogens are also capable of causing human disease or death to unprotected people who come into contact with infected blood or body fluids. Diseases caused by blood-borne pathogens include, but are not limited to, hepatitis A, hepatitis B, hepatitis C, malaria, acquired immunodeficiency syndrome (AIDS), and other sexually transmitted diseases. The most significant of these and of greatest concern are hepatitis B and AIDS.

Hepatitis B is a serious disease caused by the hepatitis B virus (HBV), which attacks the liver. The virus can cause lifelong infection, cirrhosis (scarring) of the liver, liver cancer, liver failure, and death. Exposure symptoms include fever, fatigue, nausea, vomiting, muscle aches, loss of appetite, and jaundice (yellowing of the eyes or skin). Hepatitis diagnosis is difficult because some symptoms are similar to the flu and may remain mild for an extended period. The HBV can remain infectious for up to 10-days, even in dried blood. Hepatitis B vaccine is available for all age groups to prevent HBV infection.

Human immunodeficiency virus (HIV) is the virus that causes AIDS. People with HIV have what is called HIV infection. Some of these people will develop AIDS as a result of their HIV infection. Humans may be infected with HIV for many years without experiencing any symptoms. Upon development of AIDS, symptoms may include weight loss, skin lesions, dry cough, fever, fatigue, diarrhea, swelling of the lymph glands, and death. Presently, no cure exists for HIV or AIDS, and no vaccination is currently available.

A hazard exists for blood and other bodily fluids to be infected with dangerous, infectious pathogens. Employees could become infected if they are exposed to these blood-borne pathogens.

The purpose of this Blood-borne Pathogen Exposure Control Plan is to provide the information, procedures, and requirements necessary to prevent employee exposure to blood-borne pathogens.

12.1 Regulatory, Requirement, and Policy Compliance

This Blood-borne Pathogen Exposure Control Plan has been prepared in compliance with:

- 29 CFR 1910.1030, Blood-borne Pathogens
- CMS-710-01-PR-00300, Bloodborne Pathogens

12.2 Exposure Determination

Occupational Safety and Health Administration requires employers to perform an exposure determination, identifying employees who may incur occupational exposure to blood or other potentially infectious materials. The exposure determination is made without regard to the use of PPE. For exposure determination purposes, employees are considered to be exposed, even if they wear PPE.

Activities at this project do not present a high risk of employee exposure to blood or other body fluids. An exception to this would be under circumstances when personnel administer first aid care or CPR to injured workers and when personnel clean-up areas and equipment that may have come in contact with blood as a result of the incident. In these cases, there is reasonable potential for employee skin, eye, mucous membrane, or potential contact with blood or other bodily fluids.

Occupational Safety and Health Administration requires a listing of job classifications with identification of tasks performed in which some employees may have potential for occupational exposure. This requirement is for employees to clearly understand the tasks that they may perform have a potential for occupational exposure to infectious materials. The job classifications and associated tasks with an exposure potential are as follows:

- Response Manager (or designee) —Administer first aid or CPR; decontaminate or disinfect surfaces and articles that have contacted infectious materials, and prepare biohazard waste for temporary storage and subsequent disposal.
- Laborer—Administer first aid or CPR; decontaminate or disinfect surfaces and articles that have contacted infectious materials, and prepare biohazard waste for temporary storage and subsequent disposal.

These employees have potential for exposure to blood-borne pathogens when administering first aid or CPR and when performing post-accident clean-up operations due to:

- Contact or absorption of blood or blood-contaminated objects through open or broken skin (i.e., cuts, scratches, and rashes)
- Blood splashes to their eyes, nose, or mouth, or other mucous membranes
- Punctures through the skin with a contaminated sharp object (i.e., scissors)

Workers can reduce their risk of contacting blood-borne pathogens by implementing the recommended work practices (outlined in this SSHP) before, during, and after responding to emergency medical incidents primarily involving personal injuries.

12.3 Schedule of Implementation

The procedures in this Blood-borne Pathogen Exposure Control Plan are to be implemented immediately.

Implementation includes:

- Verifying personnel, who are available to voluntarily provide first aid care and CPR holding a valid training completion certificate from a reputable training provider (American Red Cross or American Heart Association).

  The RM (or designee) is responsible for verifying that an appropriate number of personnel have been trained in and hold valid certification to perform first aid and CPR.

- Verifying that personnel voluntarily providing first aid care, CPR, post-accident clean-up operations, and biohazard waste handling have received the specialized training meeting the requirements of 29 CFR §1910.1030 and CMS-710-01-PR-00300. This training is required for applicable personnel prior to the commencement of work and at least annually thereafter. This training shall cover the following elements:

  – Copy of 29 CFR 1910.1030 and this procedure including an explanation of the contents

  – General explanation of the epidemiology and symptoms of blood-borne diseases

  – Explanation of the modes of transmission of blood-borne pathogens

  – Explanation of the appropriate methods for recognizing tasks and other activities that may involve exposure to blood and other potentially infectious materials

  – Explanation of the use and limitations of practices that will prevent or reduce exposure including appropriate engineering controls, work practices, and PPE

  – Information of the types, proper use, location, removal, handling, decontamination, and/or disposal of PPE

  – Explanation of the basis for selection of PPE

  – Information on the hepatitis B vaccine, including information on its efficacy, safety, and the benefits of being vaccinated

  – Information on the appropriate actions to take and persons to contact in an emergency

  – Explanation of the procedure to follow if an exposure incident occurs including the method of reporting the incident and the medical follow-up that will be made available

  - Information on the medical counseling that is provided for exposed individuals
  - Explanation of required signs and labels

  The RM (or designee) is responsible for verifying that this blood-borne pathogen training has occurred.

- Verifying that engineering controls are readily available at the project for use in an emergency. Engineering controls for this project include:
  - (5) Red-bags for temporary storage of contaminated PPE and cleaning materials
  - (1) Appropriately labeled, 30-gallon hard-plastic container for the temporary storage of red-bagged waste
  - (1) Whisk-broom and dust pan for cleaning up contaminated broken glass
  - (1) Gallon container of Clorox household bleach
  - (1) Large utility sponge
  - (2) Rolls of paper towels
  - (1) Container of liquid disinfectant hand soap
  - (10) "Biohazard" warning labels
  - (10) Individually packaged disinfectant towelettes
  - (2) CPR barriers

  The RM (or designee) is responsible for verifying that this inventory of engineering controls is readily available at the project-site for emergency use.

- Verifying that the appropriate PPE for use in an emergency is readily available at the project site.

Personal protective equipment is necessary to prevent employee exposures to infectious materials. The necessary PPE, which shall be maintained separately for use in an emergency include:

- (Five) P-100 Particulate filtering face-piece respirator (3-M 8293 or equivalent)
- (Two) Face-shields with ratcheting head-suspension
- (Three-pair) Safety glasses with clear lens
- (Box of 100) Disposable nitrile examination gloves
- (Three-pair) Polyvinyl chloride Monkey Grip work gloves

- (Four) Poly-coated or Saran-coated disposable Tyvek® coveralls with attached hood
- (Eight-pair) Vinyl or latex disposable boot covers
- (Eight) Fluid-resistant surgical hoods

The RM, or designee, is responsible for verifying that the above inventory of PPE is readily available at the project site for emergency use.

12.4 Work Practice Controls

Work practice controls reduce the likelihood of exposure by altering the manner in which a task is performed. The work practice controls outlined in this section are applicable to the administration of first aid and the subsequent clean-up operations.

Work practice controls shall be instituted whenever there is potential for employee contact with blood and bodily fluid. Situational examples where these controls are to be implemented include, but are not limited to:

- The voluntary administration of first aid care, such as application of bandages to minor or major cuts and abrasions of another person. This care may allow for contact with sores, wounds, broken skin, blood, or other bodily fluids.
- The voluntary administration of first aid care, such as providing CPR.
- Clean-up activities involving handling soiled articles (e.g., gauze, bandages, compresses, etc.) and the decontamination or disinfecting of surfaces and articles that have contacted potentially infectious materials, such as blood or other bodily fluids.
- Prepare biohazard waste for temporary storage and subsequent disposal.

Based upon professional judgment, an employee may choose to temporarily forego the use of PPE if the employee determines that the use of the PPE will further jeopardize his well-being or that of the injured worker. This limited application must be carefully evaluated and considered by the employee. If this situation does occur, CB&I will investigate and document the circumstances in an effort to provide alternative means to avoid further occurrence.

The following are specific work practice controls that shall be implemented in the above noted situations or whenever an employee determines that the implementation of these work practices is prudent or necessary:

- The appropriate PPE shall be donned prior to engaging in any activities that have the potential for employee contact with potentially infectious materials, such as blood or other bodily fluids.

- Hands and face will be washed as soon as possible after engaging in any activities that have the potential for employee contact with potentially infectious materials, such as blood or other bodily fluids. If wash facilities are not readily available, individually packaged disinfectant towelettes may be used in the interim.
- Eating, drinking, or smoking is not allowed in any work area where a potential exists for occupational exposure to blood-borne pathogens.
- Open wounds or cuts shall be promptly bandaged.
- Work surfaces and areas shall be cleaned and disinfected immediately after being contacted by potentially infectious materials. A 10 percent bleach solution (one part bleach added to nine parts water) shall be applied and allowed to have a contact time of 15-minutes. Nondisposable articles, equipment, or materials contaminated with potentially infectious materials shall be similarly cleaned/disinfected prior to reuse.
- All bins, pails, cans, and similar receptacles intended for reuse, which have become contaminated with blood or other potentially infectious materials shall be cleaned and disinfected immediately after use.
- Broken glassware, which may be contaminated, shall not be picked up directly by hand. Broken glass shall be picked-up using mechanical means, such as by using a whiskbroom and dustpan.
- All PPE shall be immediately removed upon leaving the potentially contaminated work area, or as soon as possible if visibly contaminated. The contaminated PPE shall be placed in a labeled "red-bag" and then placed in the 30-gallon container for temporary storage and subsequent disposal.
- Any clothing that has contacted blood or other potentially infectious fluids shall be removed as soon as possible.
- Any clothing that has contacted blood or infectious fluids shall be placed in a labeled "red-bag" and then placed in the 30-gallon container for temporary storage and subsequent disposal.

12.4.1 Universal Precautions

Universal precautions is a method of infection control, which operates on the assumption that all human blood and bodily fluids are to be treated as if they are known to be infectious for HIV, HBV, or other blood-borne pathogens. Universal precautions shall be observed to prevent contact with blood or other potentially infectious materials. Universal precautions consist of the following practices:

- All workers shall routinely use appropriate barrier precautions to prevent skin and mucous-membrane exposure when contact with blood or other bodily fluids is anticipated. Gloves should be worn for touching blood and bodily fluids, mucous membranes, or non-intact skin and for handling items or surfaces contaminated with

blood or body fluids. Masks and protective eyewear or face shields shall be worn during procedures that are likely to generate droplets of blood or other body fluids to prevent exposure of mucous membranes of the mouth, nose, and eyes. Protective suits shall be worn during procedures that are likely to generate splashes of blood or other bodily fluids.

- Hands and other skin surfaces shall be washed immediately and thoroughly if contaminated with blood or other bodily fluids. Hands shall be washed immediately after gloves are removed, using a disinfectant soap.
- Cardiopulmonary resuscitation barriers or other ventilation devices should be available for use in areas in which the need for resuscitation is foreseeable.
- Workers who have exudative lesions or weeping dermatitis shall be excluded from handling potentially infectious materials until the condition resolves.
- Pregnant workers should be especially familiar with and strictly adhere to precautions to minimize the risk of transmission.

12.4.2 Personal Protective Equipment

The proper use of PPE is an effective work practice control. The following requirements for PPE are mandatory whenever there is potential for employee contact with blood and bodily fluid:

- Inspect PPE prior to use to verify it is in good working order and without defects.
- Blood or other potentially infectious materials.
- Disposable (single use) gloves, such as surgical or examination gloves shall be replaced when visibly soiled, torn, punctured, or when their ability to function as a barrier is compromised. Gloves should be changed as soon as possible after contact with blood or bodily fluids. After use, remove gloves from top to bottom inside out, not allowing unprotected skin to contact the exterior of the gloves. Hands and other skin surfaces shall be washed with disinfectant soap immediately after care has been rendered or clean up has been completed. Gloves reduce the incidence of blood contamination of hands, but they cannot prevent penetrating injuries caused by sharp objects. Do not reuse gloves once removed. A CPR barrier shall be used when administering CPR.
- Protection for the eyes, face, hands, body, feet, and against inhalation hazards shall be provided as appropriate for each job.
- Gloves shall be worn when employees have the potential for direct skin contact with or when handling items or surfaces soiled with blood, other potentially infectious materials, mucous membranes, and non-intact skin.
- Polyvinyl chloride work gloves may be disinfected for immediate reuse if the integrity of the glove is not compromised; however, gloves must be discarded if they are cracked, peeling, discolored, torn, punctured, or exhibit other signs of deterioration.

All gloves shall be discarded at the conclusion of the activity or at the end of the shift – whichever comes first.

- Masks and eye protection or chin-length face shields shall be worn whenever splashes, spray, splatter, droplets, or aerosols of blood or other potentially infectious materials may be generated and there is a potential for eye, nose, or mouth contamination.
- Fluid-resistant clothing (e.g., coated Tyvek® suits) shall be worn if there is a potential for splashing or spraying of blood or potentially infectious materials. Coated Tyvek® coveralls shall also be worn during clean-up activities involving decontamination or disinfecting of surfaces and articles that have contacted potentially infectious materials, and when preparing biohazard waste for temporary storage and subsequent disposal.
- Fluid-resistant clothing (e.g., coated Tyvek® suits) shall be worn if there is a potential for clothing becoming soaked with blood or other potentially infectious materials.
- Surgical caps or hoods shall be worn if there is a potential for splashing or splattering of blood or potentially infectious materials on the head.
- Fluid-proof coverings shall be worn if there is a potential for shoes or boots to contact blood or other potentially infectious materials.
- Disposable nitrile or vinyl gloves shall be worn for touching blood and bodily fluids requiring universal precautions, mucous membranes, or non-intact skin and for handling items or surfaces soiled with blood or bodily fluids to which universal precautions apply.

12.4.3 Waste Handling

All wastes generated as a result of administering emergency first aid care and the subsequent clean-up activities shall be placed in red-bags, labeled as a biohazard, and kept separately from other trash. Wastes used in medical emergency treatment (i.e., gloves, towels, and gauze) shall also be bagged and stored in an identical manner. Red-bagged, biohazard waste shall be placed in the 30-gallon collection container, labeled, and secured for temporary storage and disposal. Additional containers shall be obtained as needed and containers shall not be overfilled.

12.5 Biohazard Waste Disposal

A CB&I Transportation and Disposal Coordinator shall be contacted to arrange for proper disposal of biohazard wastes. The waste shall remain secured on site in labeled container(s) until disposal arrangements have been made at an approved disposal facility. Disposal of the infectious waste container(s) shall be in accordance with applicable local, state, and federal regulations.

12.6 Medical Requirements

Employees receive medical evaluations in accordance with CB&I procedures. The medical requirements of this exposure control plan include provisions for vaccinations to all exposed employees as well as for post-exposure procedures and evaluation. All employees with potential for occupational exposure to blood-borne pathogens shall receive the hepatitis B vaccination and tetanus vaccination prior to workplace exposure, unless they read and sign the Hepatitis B and Tetanus Vaccination Declination Form (Appendix D).

12.6.1 Hepatitis B Vaccination

All potentially exposed employees will have made available to them at no cost a hepatitis B vaccination. Recombivax or Accelerated Recombivax vaccines shall be utilized. If the employee has previously received the hepatitis B vaccination and/or antibody testing reveals that the employee is immune, a new vaccination is not required. Employees may be subjected to occupational exposure immediately after receiving the first shot in the hepatitis B vaccination series. Antibody testing shall be performed 30-days after completing the hepatitis B vaccination series. Employees unable to develop immunity shall be precluded from further occupational exposure. If a physician recommends a booster dose(s), the doses shall be provided according to standard recommendations for medical practice. The employee will also receive training as to the vaccine's efficacy, safety, benefits, and consequences prior to administration. The vaccination series may also be initiated within 24-hours of an incident with exposure potential.

12.6.2 Tetanus Vaccination

All employees subject to this policy shall maintain current-status documentation of tetanus vaccination (current status for tetanus vaccination is within 5 years). All potentially exposed employees shall be offered a tetanus vaccination at no cost.

12.6.3 Post-Exposure Procedures and Evaluation

All exposure incidents shall be reported as required by CMS-710-05-PR-02200, Incident Notification. The Corporate Medical Director shall be advised in addition to standard notification procedures.

Following a report of an exposure incident, each involved employee shall be offered a confidential medical evaluation and follow-up, which includes at least the following elements:

- Documentation of the route(s) of exposure.
- Hepatitis B virus and HIV antibody status of the source patient(s) (if known), and how the exposure occurred.
- The medical confidentiality rights of the source patient shall be preserved at all times.

- If the source patient can be determined and permission is obtained, collection of and testing of the source patient's blood to determine the presence of HIV or HBV infection shall be conducted under the direction of the attending physician.
- Collection of blood from the exposed employee as soon as possible after the exposure incident for the determination of HIV and/or HBV status. Actual core antibody and surface antigen testing of the blood or serum sample may be done at that time or at a later date if the employee so requests. If the test is deferred, arrangements shall be made through the attending physician to properly archive the specimen.
- Follow-up of the exposed employee including antibody and antigen testing, counseling, illness reporting, and safe and effective post-exposure prophylaxis, according to standard recommendations for medical practice as defined by the Corporate Medical Director.

Where applicable laws require employee consent, documented consent shall be obtained prior to testing. If an employee refuses the blood test, documentation of the refusal will be made. Documentation of the test results shall be made available to the exposed employee(s). All test results shall be kept confidential.

12.6.4 Physician Information

The following information shall be provided to the evaluating physician:

- Copy of 29 CFR 1910.1030 and its appendices
- Description of the affected employee's duties as they relate to the employee's occupational exposure

12.6.5 Physician Opinion

For each potentially exposed employee evaluation, the employee shall receive a copy of the evaluating physician's written opinion within 15 working days of the completion of the evaluation. The written opinion shall be limited to the following information:

- The physician's recommended limitations upon the employee's ability to receive hepatitis B vaccination.
- A statement that the employee has been informed of the results of the medical evaluation and that the employee has been told about any medical conditions resulting from exposure to blood or other potentially infectious materials, which require further evaluation or treatment.
- Specific findings or diagnoses, which are related to the employee's ability to receive HBV vaccination. Any other findings and diagnoses shall remain confidential.

12.6.6 Hazard Communication

There are regulatory requirements for labels, signs, and training. The provisions and exceptions for these are contained in the subsections below.

12.6.7 Warning Labels

Containers used for disposal of blood-contaminated supplies and waste will be labeled in accordance with the word "biohazard." The following symbol shall be an integral part of the label:

12.6.8 Warning Signs

There are no designated areas for medical treatment on site, because first aid is provided on an emergency basis only; therefore, warning signs are not applicable. In cases of potential exposure, observers and nonessential personnel should be verbally warned to keep a safe distance from injured personnel.

12.6.9 Employee Training Program

All employees who are first aid/CPR trained and may provide assistance shall be trained in the requirements for voluntary providers as described in CMS-710-01-PR-00300, Bloodborne Pathogens, this SSHP, and the general provisions of this procedure.

12.7 Recordkeeping

There are federal record-keeping requirements for training, medical, and incident reporting documentation. The provisions for keeping these records are contained in the subsections below.

12.7.1 Training Records

All employees covered under this exposure plan shall be trained as required. A record of the training shall be appropriately generated. The training record will contain the date of the training session(s), the contents or a summary of the training session(s), the names of persons conducting the training, and the names of all persons attending the training sessions.

The training records will be maintained by the CB&I Training Department for at least 5 years from the training date.

12.7.2 Medical Records

Medical records necessary for CB&I employees will include documentation of HBV vaccination status, medical follow-up, post-exposure testing, and a medical professional's written evaluation.

The employee medical records will be forwarded to and maintained by CORE Health Networks, 10059 North Reiger Road, Baton Rouge, Louisiana 70809 for inclusion in the employee's medical file. Confidentiality of all medical records shall be maintained.

CB&I Federal Services, LLC maintains employee medical records for the duration of the employee's employment plus 30 years thereafter. If, for whatever reason, CB&I no longer does business and no successor exists, CB&I will notify the director of NIOSH in writing 3 months prior to the disposal of records. If so directed, the records shall be transferred to the director of NIOSH.

12.7.3 Incident Recording

An incident that occurs as a result of rendering emergency medical care will be recorded on the OSHA 300 log as OSHA defines work-related injuries and illnesses. All injuries involving the release of blood or bodily fluids must be immediately reported to the HSE PROGRAM MANAGER for proper reporting and follow-up.

12.8 Plan Review and Update

This Blood-borne Pathogen Exposure Control Plan shall be reviewed and updated on an annual basis.

13.0 Logs, Reports, and Record Keeping

Proper record keeping and data management are essential in the implementation of this SSHP. The forms associated with the record keeping and data management requirements shall be completed in an accurate, timely fashion and appropriately filed. The proper completion of forms is the responsibility of the RM. Completed forms will be kept and maintained by CB&I for a 5-year period. Subcontractors will also be responsible for keeping a copy of the forms pertaining to their activities.

Copies of all pertinent site safety and health forms and logs are provided in Appendix D.

13.1 Daily Safety Log

The RM, or designee, will maintain and complete a daily log for each day's work. The daily log will document each day's safety and health activities in sufficient detail for future reference as needed.

The following items will be developed as applicable and maintained on site by the RM, or designee, as part of the daily safety log:

- Daily safety meeting logs
- Employee/visitor sign-in logs
- Confined space entry permits (as necessary)
- Hot Work Permits (as necessary)
- Air monitoring/sampling data forms
- Project safety inspections (daily and monthly)
- Contractor safety inspections
- Hazard Communication Program audits
- Warnings given related to safety infractions
- AHAs
- JSAs
- I CARE Observation Cards
- Accident investigation reports
- First aid log
- Personnel training and medical certificates

All personnel will be required to log in and out of the Exclusion Zone. The Exclusion Zone sign in log, maintained as part of the daily safety log, provides a project record of the following information for each shift's activities:

- Worker's name

- Work area
- Duties performed
- Level of protection
- Time in/time out

A visitor's sign in (Site Entry Log) sheet will be maintained at the office. Visitors requesting access to regulated areas shall have appropriate project approval, be medically qualified, and have the safety and health training prerequisites for hazardous waste site operations.

13.2 Safety Inspections/Audits

CB&I Federal Services, LLC's accident prevention program is centered on the following key procedures:

- Elimination of all incidents.
- Investigating, reporting, and reviewing of all near misses, incidents, and accidents
- Managing reviews of all incident/accident reports, corrective action, and project safety concerns
- Reviewing of project, operations, and construction activities by safety and health professionals and supervisory personnel

Safety reviews and inspections are conducted by all tiers of the management structure and are documented. A list of all corrective action items is required to be maintained showing the corrective action, responsible person, and the date action is to be completed. Follow-up inspections are conducted by safety and health personnel to verify that corrective actions or measures have been implemented.

The RM will inspect the site daily and identify areas of safety concerns or deficiencies. Daily safety inspections shall be documented on the Daily Safety Inspection Report (Appendix D). All identified safety and occupational health concerns or deficiencies shall be corrected in a timely fashion, which is consistent with the degree of hazard presented.

Safety and occupational health deficiencies shall be tracked by a system that lists and monitors the status of safety and health deficiencies in chronological order. The list will be posted on the project safety bulletin board, will be updated daily, and will provide the following information:

- Date deficiency identified
- Description of deficiency
- Name of person responsible for correcting deficiency
- Projected resolution date
- Date actually resolved

The RM will immediately notify the HSE PROGRAM MANAGER of any OSHA or other regulatory agency inspection. The RM shall provide the OSC and the HSE PROGRAM MANAGER a copy of any citations or reports issued by the inspector and any corrective action responses to the citation(s) or report(s).

13.3 Incident Investigation and Reporting

Project personnel are required to report all near misses, injuries, illnesses, and accidents to their immediate supervisor. The RM shall immediately arrange appropriate medical care as required. Once immediate medical care for the injured personnel or other critical emergency procedures has been accomplished, the RM shall follow the Incident Notification, Reporting, and Management Procedures (Appendix G). The appropriate form(s) to be completed are in Appendix D and include the following:

- Incident Notification Report
- Incident Investigation Report
- Injured Employee Statement
- Employee Witness Statement
- Accident Review Board

The investigation shall determine why the incident occurred and then identify the causal factors. Corrective actions will be determined and implemented to prevent the recurrence of the incident. The responsibilities for implementing corrective actions will be assigned.

In the event that an incident results in an employee needing medical care, the CB&I Return-to-Work Examination Form shall be completed by the attending physician, on the date of treatment stating whether the employee:

- May return to full duty work
- May return to limited duty (with type of limitations)
- Is unable to return to work

A copy of this release shall accompany the incident report. In addition to the requirement for maintaining a log of OSHA recordable injuries/illnesses, a separate log will be maintained for all first aid treatments not otherwise recordable/reportable.

14.0 References

American Conference of Governmental Industrial Hygienists (ACGIH), 2012, *Threshold Limit Values and Biological Exposure Indices, Cincinnati, Ohio.*

Marlowe, C., 1999, *Safety Now: Controlling Chemical Exposures at Hazardous Waste Sites with Real-Time Measurements,* AIHA Press, American Industrial Hygiene Association (AIHA), Fairfax, Virginia.

Code of Federal Regulations (CFR), Title 29, Part 1910, *Safety and Health Regulations for General Industry*, U.S. Government Printing Office, Washington, D.C., <http://www.access.gpo.gov/nara/cfr/index.html>

Code of Federal Regulations (CFR), Title 29, Part 1926, *Safety and Health Regulations for Construction*, U.S. Government Printing Office, Washington, D.C., <http://www.access.gpo.gov/nara/cfr/index.html>

National Fire Protection Agency (NFPA) 70E, 2012, *Standard for Electrical Safety in the Workplace*, National Fire Protection Association 1, Batterymarch Park, Quincy, Massachusetts.

National Institute for Occupational Safety and Health (NIOSH), 2007, *Pocket Guide to Chemical Hazards*, Publication No. 2005-149, Cincinnati, Ohio, September.

National Institute for Occupational Safety and Health, Occupational Safety and Health Administration, U.S. Coast Guard, and U.S. Environmental Protection Agency (NIOSH et al.), 1985, *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*, NIOSH Publication No. 85-115, Cincinnati, Ohio, October.

Office of Solid Waste and Emergency Response, 2002, Integrated Health and Safety Program Standard Operating Practices for OSWER Field Activities, EPA Publication 9285.0-01 C, June.

Shaw Environmental, Inc. (Shaw), *Policies and Procedures Portal*, (Current Revision) <http://shawnet3.shawgrp.com/sites/handspps/default.aspx>

CB&I Federal Services, LLC, *CB&I Management System, 710 Series*

Tables

Table 1
Project Organization Personnel

Title	Contact
Response Manager	LeRoy Cassidey 469-446-8408 (cell) leroy.cassidey@cbifederalservices.com
Site Safety and Health Officer	LeRoy Cassidey 469-446-8408 (cell) leroy.cassidey@cbifederalservices.com
Program / Project Manager	John K Neal 225-252-6547 (cell) john.neal@cbifederalservices.com
Program HSE Manager	Jeffery Guzzardo 225-250-8108 (cell) Jeffery.guzzardo@cbifederalservices.com
USEPA OSC	Gary Moore (office) 214 665-6609 (cell) 214 789 1627Moore.gary@epa.gov

OSC denotes Remedial Project Manager (On-Site Coordinator)

USEPA denotes U.S. Environmental Protection Agency.

Table 2
Minimum Clearance from Energized Overhead Electric Lines

Nominal System Voltage	Minimum Required Clearance
0 to 50 kilovolts	3 meters (10 feet)
51 to 200 kilovolts	4.5 meters (15 feet)
201 to 300 kilovolts	6 meters (20 feet)
301 to 500 kilovolts	7.5 meters (25 feet)
501 to 750 kilovolts	10.5 meters (35 feet)
751 to 1,000 kilovolts	13.5 meters (45 feet)

Table 3
Task Protection Levels

Task	Initial PPE Level	Upgrade PPE Level	Skin Protection	Respiratory Protection	Other PPE
Mobilization/Site setup	Level D	Level D-Modified	Generally none: some activities may require Tyvek® coveralls to prevent insect bites/contact with poisonous plants	None	Hearing protection >85 dBA or when operating equipment; leather work-gloves.
Waste Transfer / Consolidation	Level D - Modified	Level C	Poly- Tyvek® coveralls or vinyl rain gear, boot covers, PVC gloves when dealing with liquids	Upgrade : full-face APR with P-100	Hearing protection >85 dBA or when operating equipment
Confined Space Entry – tank cleaning	Level C	Level B	Vinyl rain gear, or Tychem Tyvek® coveralls, PVC gloves, PVC boots	Full-face APR with P-100 Upgrade: airline respirator	PVC hydro-blaster's boots with metatarsal gurads, shin guards, faceshield, Hearing protection >85 dBA during high pressure water cleaning operations
Waste Preparaton	Level C	Level B	Please add		
Equipment decontamination	Level D-Modified	NA	Vinyl rain gear, inner nitrile gloves, outer nitrile gloves, boot covers, face shield	None	Hearing protection >85 dBA, face shield, and shin/metatarsal protection.
Site restoration	Level D	NA	Generally none: some activities may require Tyvek® coveralls to prevent insect bites/contact with poisonous plants	None	Hearing protection >85 dBA, leatherwork gloves.
Demobilization	Level D	NA	Generally none: some activities may require Tyvek® coveralls to prevent insect bites/contact with poisonous plants	None	Hearing protection >85 dBA, leatherwork gloves, electrical safety PPE.

dBA denotes decibels.

NA denotes not applicable.

PPE denotes personal protective equipment.

Table 4
Direct Reading Air Monitoring Requirements

Monitoring Device/ Contaminant	Monitoring Location/ Personnel	Monitoring Frequency	**Action Level**	Action
Combustible Gas Indicator/Oxygen Meter/Carbon Monoxide (LEL/O_2/CO)	Work zone	Prior to issuing hot work permit (LEL/O_2/CO); continuously during confined space entries (LEL/O_2/CO); continuously during any fuel spill clean-up operations (LEL); intermittently in areas of limited ventilations when internal combustion engines are operating (CO).	<10% Lower Explosive Limit (LEL) 21 - 23.5% O_2 <25 ppm CO	Continue work, keep alert for changing conditions.
			>10% LEL <19.5% O_2 or >23.5% O_2 >25 ppm CO	Evacuate area, apply engineering controls, and contact HSE PROGRAM MANAGER for potential PPE upgrade.
PID: total VOCs	Work zone Inside CS, entire depth	Prior to entry	≥ 50 ppm	Increase ventilation or use full-face air purifying respirator with cartridges approved for protection against organic vapors.
			≥ 500 ppm	Do not enter CS. Continue ventilating CS until vapors decrease below action level.
Real Time Aerosol Monitor (Dust)	Breathing zone of personnel in excavation and load-out areas	Continuous during soil excavation and soil/debris load out activities	Breathing zone dust action levels (all properties including 1706 Jensen Drive): 1.0 mg/m^3 (instantaneous reading with alarm) or 0.5 mg/m^3 (TWA)	Increase dust control measures.
			> 1.0 mg/m^3 TWA	Upgrade to Level C PPE and apply additional dust control measures.
			> 1.0 mg/m^3 TWA for greater than one day	Stop dust generating activities and contact HSE PROGRAM MANAGER.

mg/m^3 denotes milligram(s) per cubic meter.
PPE denotes personal protective equipment.
ppm denotes part(s) per million.

Table 5
Emergency Telephone Numbers

Name/Organization	Telephone Numbers
Ambulance	911
Fire Department Houston Fire Department	911 713-247-8900
Police Department Houston, Police Dept.	911 713-884-3131
Hospital: Memorial Hermann Hospital – Texas Medical Center - ER 6411 Fannin Street Houston, TX 77030	713-704-4000
Core Health Networks Clinic: Concentra Medical Center 8799 N Loop Freeway E Houston, TX 77029	713-674-1114 (phone) 713-674-5169 (fax)
Poison Control Center	800-222-1222
Gary Moore (USEPA OSC)	214-789-1627 (cell)
LeRoy Cassidey (CB&I Response Manager/Site Safety and Health Officer)	469-446-8408 (cell)
John K Neal (CB&I Program Manager)	225-252-6547 (cell)
Jeffery Guzzardo (CB&I Program HSE Manager)	225-250-8108 (cell)
CB&I Help Desk/Hot Line	866-299-3445
Core Health Networks (Baton Rouge, LA)	877-347-7429 225-614-9561

OSC denotes On-scene Coordinator.

CB&I denotes CB&I Federal Services, LLC

USEPA denotes U.S. Environmental Protection Agency.

Table 9-2
Wind Chill

COOLING POWER OF WIND ON EXPOSED FLESH EXPRESSED AS EQUIVALENT TEMPERATURE												
	Actual Temperature Reading (°F)											
Estimated	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
Wind Speed (in mph)	Equivalent Chill Temperature (°F)											
Calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	4	-9	-24	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-121
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-51	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-148
(Wind speeds greater than 40 mph have little additional effect)	*LITTLE DANGER* In<hr with dry skin. Maximum danger of false sense of security.				*INCREASING DANGER* Danger from freezing of Exposed flesh within One minute.				*GREAT DANGER* Flesh may freeze within 30 seconds.			
	Trench foot and immersion foot may occur at any point on this chart.											

Figures

Appendix A
Site Safety and Health Plan Acknowledgment

SITE SAFETY AND HEALTH PLAN ACKNOWLEDGEMENT

WORKER ACKNOWLEDGEMENT TO THE SITE SAFETY AND HEALTH PLAN

I have been informed of, and will abide by, the procedures set forth in the SSHP developed for the CES Environmental Services Site. I also have been properly trained, medically monitored, and fit tested for the work that I am to perform.

Printed Name	Signature	Representing	Date

WORKER ACKNOWLEDGEMENT TO THE SITE SAFETY AND HEALTH PLAN

I have been informed of, and will abide by, the procedures set forth in the SSHP developed for the CES Environmental Services Site. I also have been properly trained, medically monitored, and fit tested for the work that I am to perform.

Printed Name	Signature	Representing	Date

Appendix B
Site Safety and Health Plan Amendments

(Reserved for Future Changes)

Appendix C
Activity Hazard Analyses

Appendix D
HSE Forms

Appendix E
CMS HSE Procedures and Work Instructions

Appendix F
Project HSE Information Pamphlet

Appendix G
Incident Notification, Reporting, and Management Procedure

Appendix H
Hurricane Preparedness Plan

Appendix I
I CARE Observation Cards

Appendix J
Material Safety Data Sheets (MSDS) or Safety Data Sheets (SDS)